242

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 7 IN SET 229

General Electric models 21C115 and 21T14 are covered in Photofact Folder 7, Set 229.

Models 17C127, 17T15, 17T17, 21C114, 21C116, 21C117, 21C120, 21C121, 21T10, 21T11 and 21T12 have now been added. These models are electrically identical to the models covered except for the following picture tube changes.

The 17 inch models (17C127, 17T15 and 17T17) use a 17QP4 picture tube.

Model 21C114 uses a 21EP4B picture tube instead of the 21EP4A.

Original production of models 21T10 and 21T11 used a 21EP4A picture tube while later production used a 21FP4A, electrostatic focus picture tube. When these receivers leave the factory the focus anode is connected to ground. If picture tube replacement is made it may be necessary to connect the focus anode lead to B+ or B+ Boost in order to maintain proper focus.

All other models in this series use the 21EP4A picture tube.

In later production the following changes were made.

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NEW TUNER

In later production the "D" tuner (part #RJX-057) is used. A schematic of this tuner is given on the next page.

VIDEO AMPLIFIER CHANGED

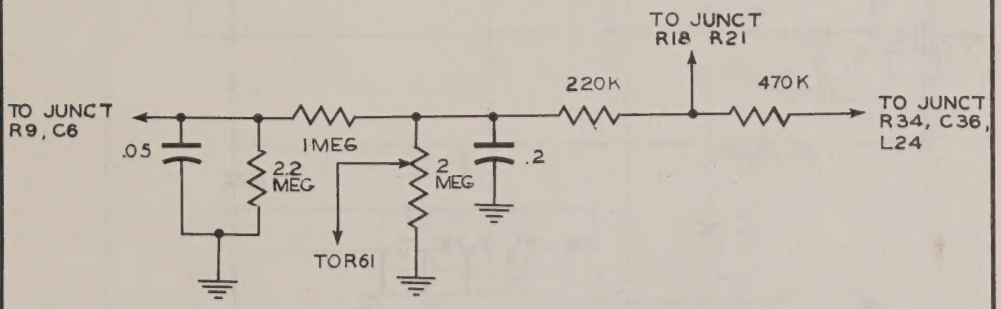
In some chassis the video output tube (V6) was changed to a type 6CL6 instead of a 6AG7. When this tube is used no circuit changes are made.

VERTICAL LINEARITY CONTROL CHANGED

The vertical linearity control (R7) was changed from 4KΩ to 2KΩ.

AGC CIRCUIT REVISED

A partial schematic showing the revised circuit is given below.



GENERAL ELECTRIC MODELS 17C127, 17T15, 17T17, 21C114, 21C115, 21C116, 21C117, 21C120, 21C121, 21T11, 21T12, 21T14

PRODUCTION CHANGES
BULLETIN 97

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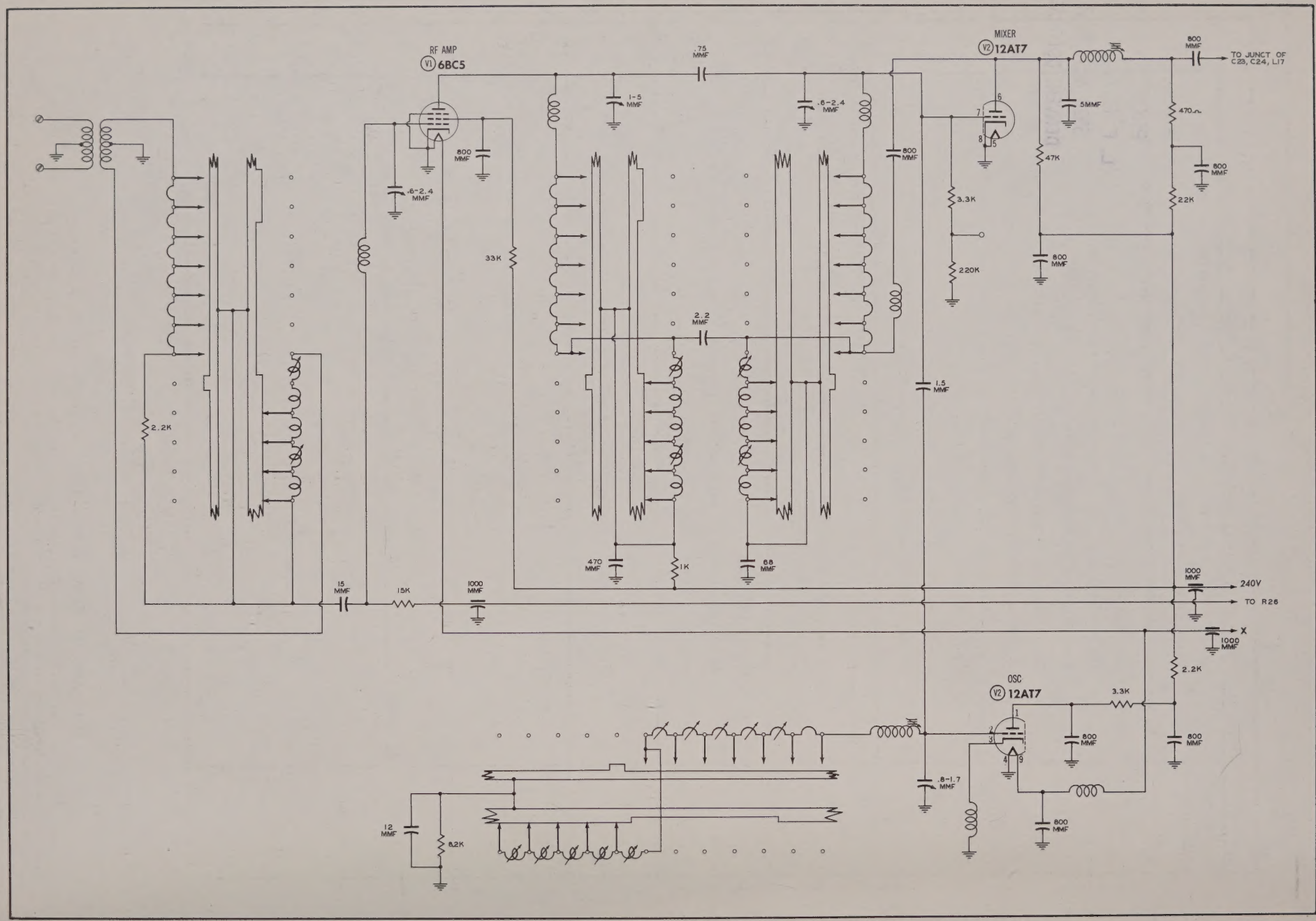
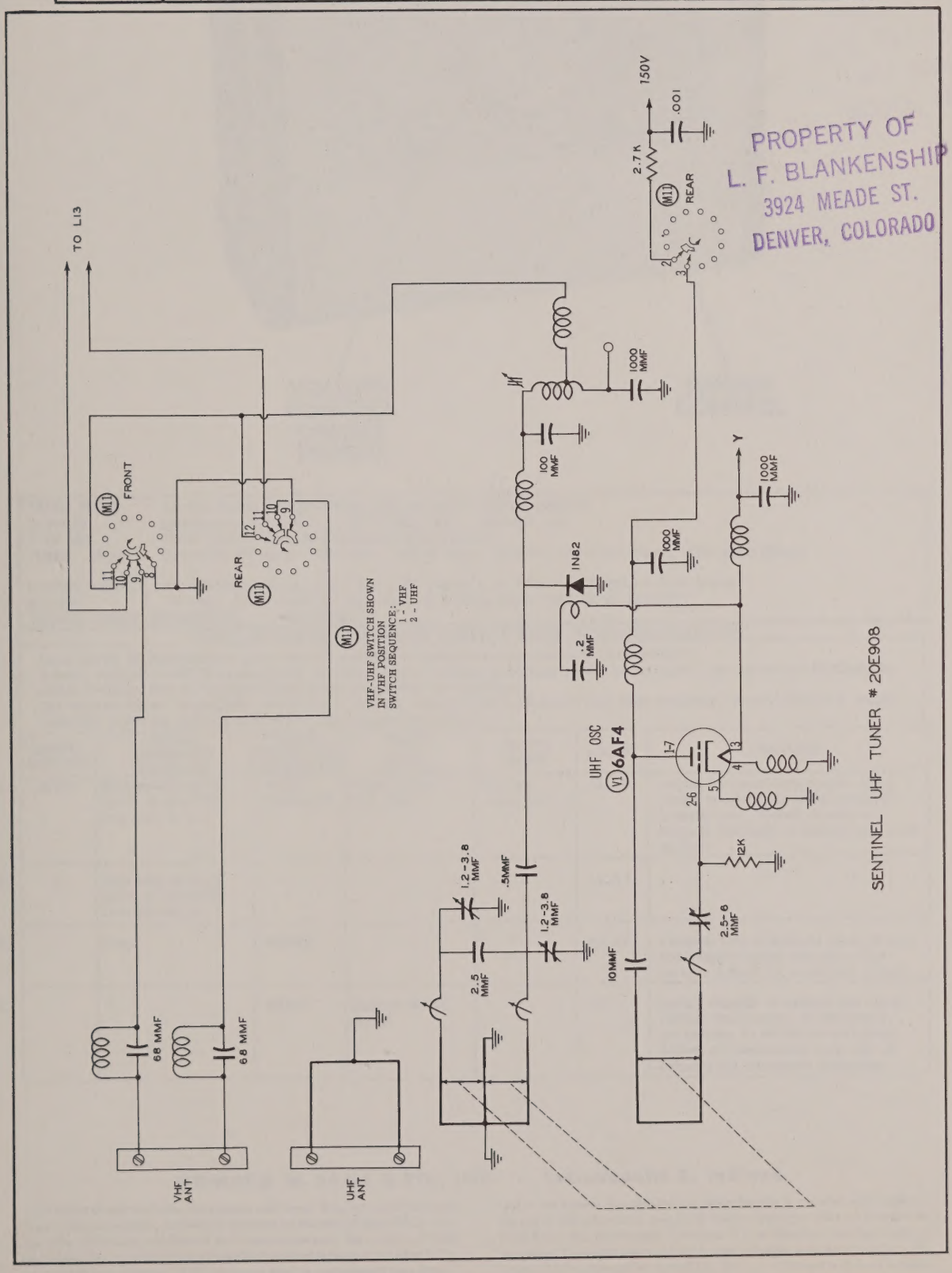

RF AMP
V1 6BC5
MIXER
V2 12AT7
OSC
V2 12AT7
.75 MMF
1-5 MMF
.6-2.4 MMF
800 MMF
33K
2.2K
2.2 MMF
1.5 MMF
3.3K
220K
47K
5MMF
470Ω
2.2K
TO JUNCT OF C23, C24, L17
470 MMF
1K
68 MMF
15 MMF
15K
1000 MMF
240V
TO R26
X
.8-1.7 MMF
12 MMF
8.2K

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 8 IN SET 226

Sentinel models 520B, 521B, 522B, 600, 610, 612, 620 and 622 are identical to the models covered in Photofact Folder 8, Set 226, except a different UHF tuner (part #20E908) is used. A schematic of this tuner is given below.

In later production C99 was changed from 680MMF to 470MMF, 10%. This change was made to eliminate drive lines in the picture and to reduce the size effect of the horizontal hold control.

SENTINEL MODELS 520B, 521B, 522B, 600, 610, 612, 620, 622



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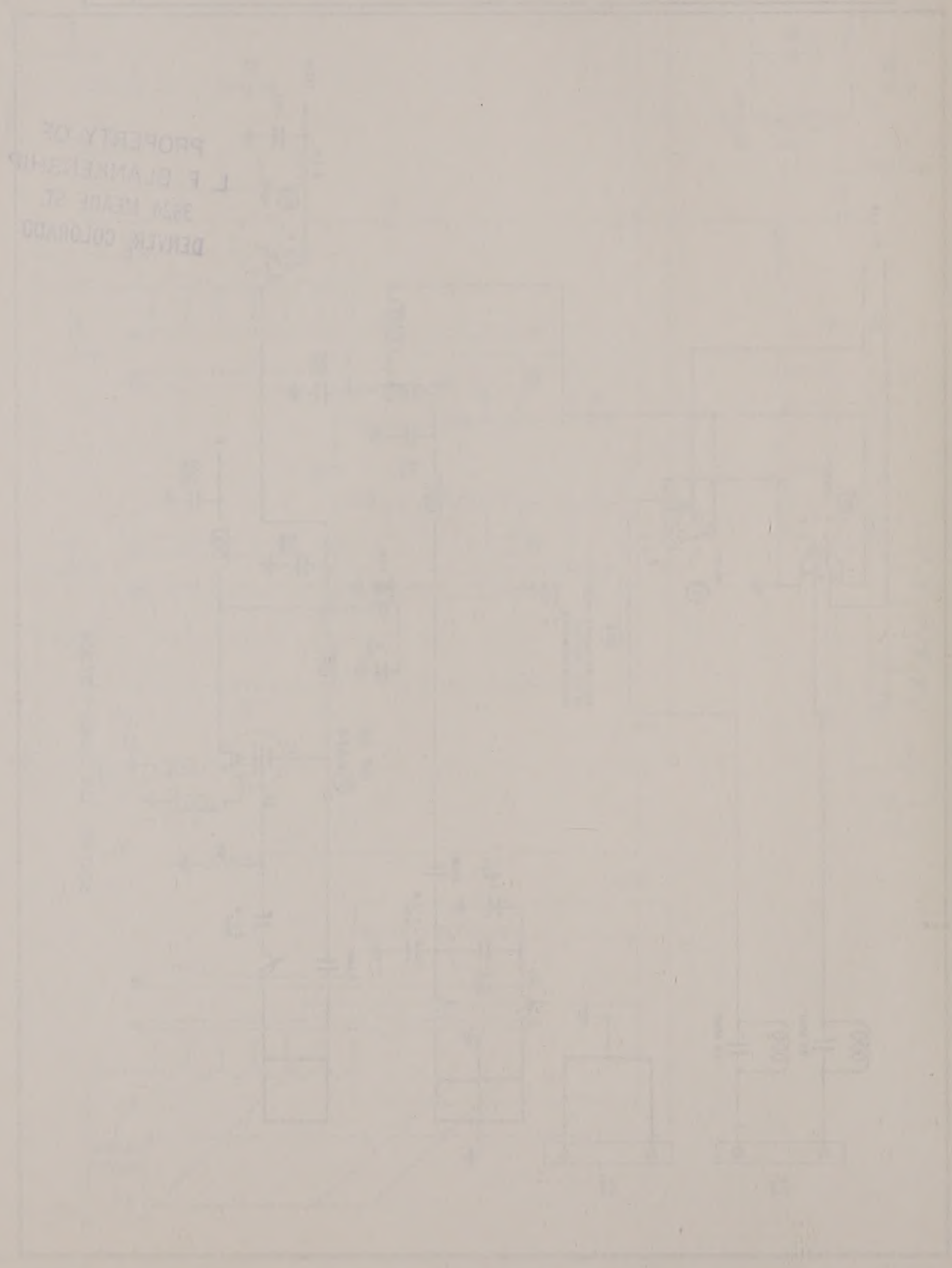
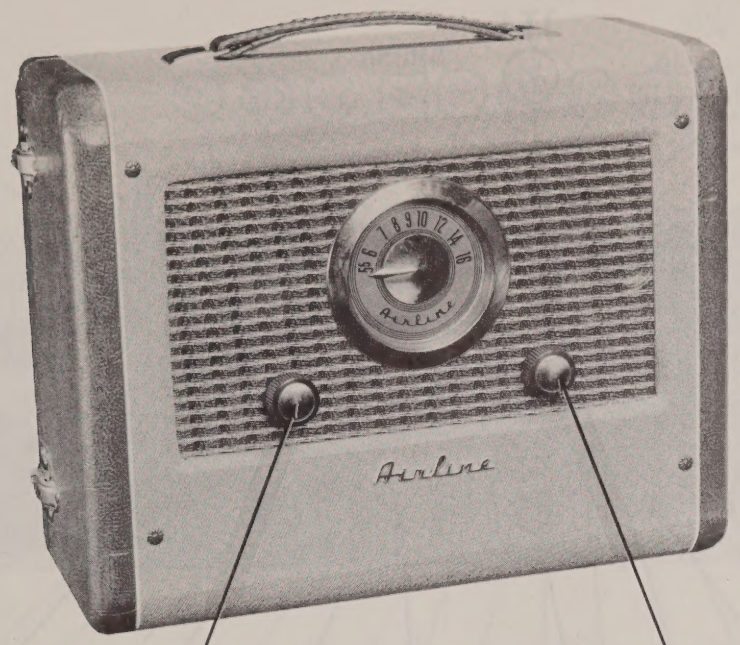


AIRLINE MODELS
25GHM-1073A, 35GHM-1073B, C



VOLUME CONTROL ON-OFF SWITCH

TUNING CONTROL

PROPERTY OF
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DENVER, COLORADO

AIRLINE MODELS
25GHM-1073A, 35GHM-1073B, C

TRADE NAME	Airline Model 25GHM-1073A (Early & Late), 35GHM-1073B, C
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (Five)	Types 1T4 RF Amp., 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	105-125 Volts AC-DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. @ 117 Volts AC (or) 50MA @ 9 Volts DC & 15MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1U4 (V3). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	High side to pin 6 (grid) of 1R5 (V2). Low side to B-.	"	"	"	A3, A4	"
3.		Loop	1620KC	"	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	Tune to 600KC signal	"	A7	Install chassis in cabinet and close cabinet back cover. If necessary, set pointer to 600KC on dial scale. Adjust A7 (accessible thru side of cabinet) for maximum deflection.

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 25GHM-1073A (Early & Late)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	1T4	1T4	6AR	
V2	Converter	1R5	1R5	7AT	
V3	IF Amplifier	1U4	1U4	6AR	
V4	Det.-AVC-AF Amp.	1U5	1U5	6BW	
V5	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	150	33X105	AFH4-38				FP411	R1505	
B	■30	150								
C	▲100	25								
D	40	25								
C2	.05	200	6-D-503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.05	200	6-D-503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C4	20		38X109	SI20	D6-200	TZ13	GP1K-200	UC-542	5GA-T20	
C5	.05	200	6-D-503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	.05	200	6-D-503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C7	.05	200	6-D-503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C8	.1	200	D-104	P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C9A	50		*38X126	*PA-99	*PC-52	*111TM3	*1403-03	UC-545	*100C3	
B	50							UC-545		
C10	5000		38X125	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C11	5000		38X125	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C12	.05	200	6-D-503	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C13	47		38X129	BPD-00047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C14	5000		38X125	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C15	2000			BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	Note 1
C16	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	Note 2

Note 1. Some Models may use a 4700MMF in this application.
Note 2. Some Models may use a .09MFD @ 400V in this application.
* Items C9A, C9B and R7 are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	18X104	Q13-133	A47-500K-Z	AB-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWE-20	KB-2	US-27	Attach to R1A

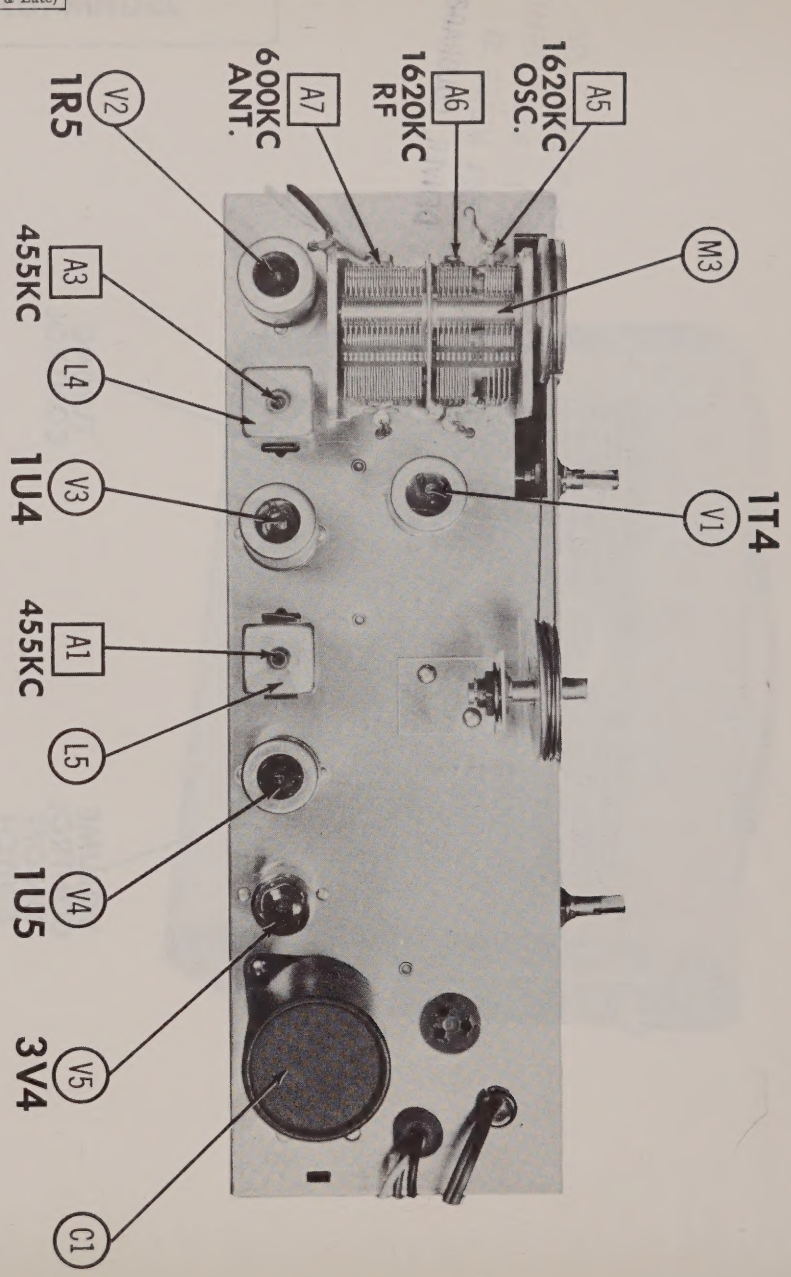
RESISTORS

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	IRC PART No.	NOTES
R2	100KΩ	½	A-60104	BTS-100K	
R3	68KΩ	½		BTS-68K	Note 3
R4	18KΩ	½	A-60183	BTS-18K	
R5	2200Ω	½	A-60220	BTS-2200	
R6	2.2Meg	½	A-60225	BTS-2.2Meg	
R7	47KΩ	½	* 38X126	BTS-47K	
R8	10 Meg	½	A-60106	BTS-10 Meg	
R9	4.7Meg	½	A-60475	BTS-4.7Meg	
R10	1 Meg	½	A-60105	BTS-1 Meg	
R11	3.3 Meg	½	A-60335	BTS-3.3Meg	
R12	25Ω	½			
R13	68Ω	½		BTS-68	

ITEM No.	RATING OHMS	RATING WATT	AIRLINE PART No.	IRC PART No.	NOTES
R14A	82Ω	10	38X119		Note 1
B	2300Ω	10			
R15	2200Ω	½		BTS-2200	Note 2
R16	820Ω	½	A-60820	BTS-820	
R17	1500Ω	½	A-60152	BTS-1500	
R18	680Ω	½	A-60681	BTS-680	
R19	750Ω	½	A-60751	BTS-750	
R20	330Ω	½	A-60331	BTS-330	
R21	270Ω	½	A-60271	BTS-270	
R22	180Ω	½	A-60181	BTS-180	
R23	82Ω	½		BTS-82	Note 2
R24	6800Ω	½	A-60682	BTS-6800	Note 4

* Items R7, C9A, C9B are combined in one unit.
Note 1. Some models may use a single 1800Ω resistor in this application.
Note 2. Not used in all models.
Note 3. Used in 25GHM-1073C model only.
Note 4. Used in models 25GHM-1073A & B only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: AIRLINE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	9. 7KΩ	3. 3Ω	3X109	A-3879	A-2932	S-11X ①	Z1000	TS-24S52	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3. 3Ω	12X100	4J4	4A07	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	1. 4Ω		19X115				Sec. tapped @ 4. 6Ω
L2	RF Coil	4. 8Ω	7Ω	9X104	14-1076			
L3	Osc. Coil	3Ω	7. 5Ω	9X101	14-1074		71-Osc. †	
L4	Input IF	16Ω	16Ω	9X106	16-6758	BC-352	12-C1	
L5	Output IF	25Ω	25Ω	9X106	16-6758	BC-353	12-C2	

† Drill mounting hole.

SELENIUM RECTIFIER

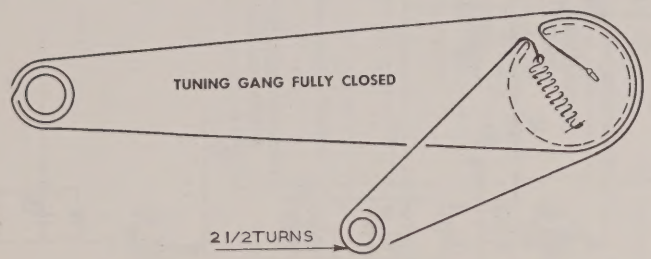
ITEM No.	RATING CURRENT	REPLACEMENT DATA: AIRLINE PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	NOTES
M1	. 065A	34X100	5M4	1003	6S75	75	

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	9V "A" 90V "B"	62-33			753			F6A60	

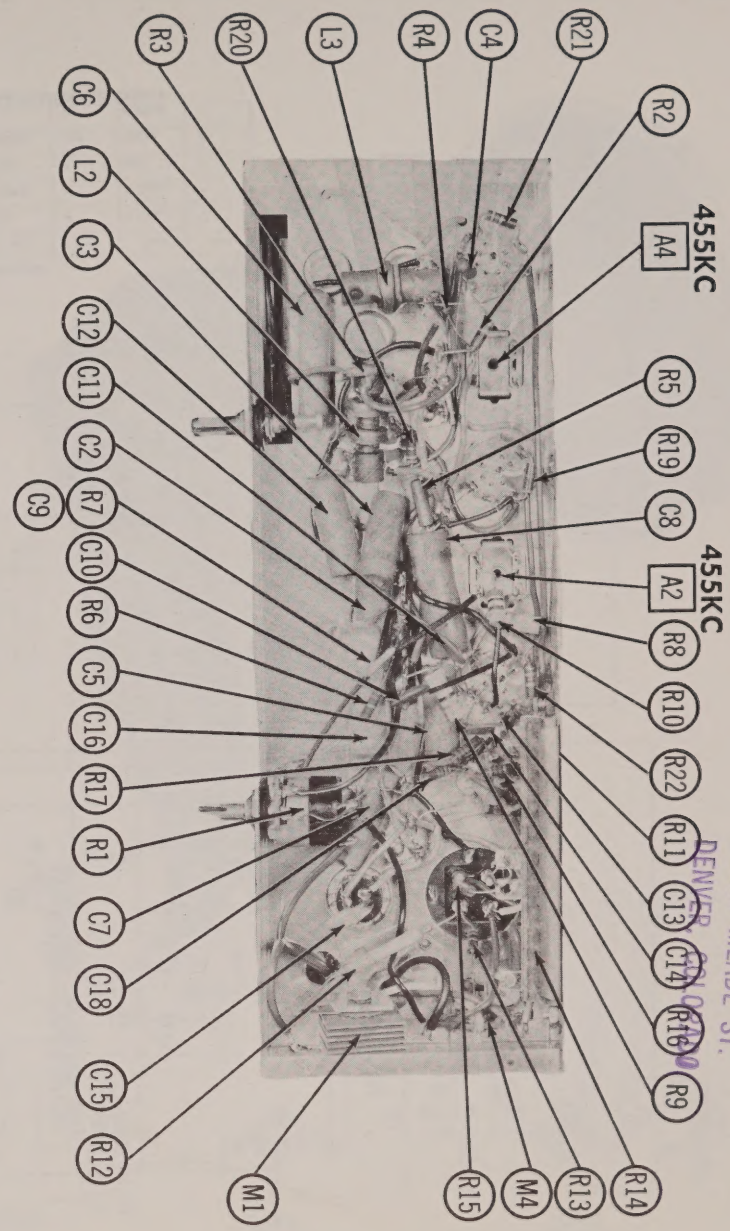
MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Tuning cap	14X103	3 section (40-512MMF, 14-215MMF, 11-100MMF)
M4	Switch	1X100	Power changeover
	Knob	10X135	(2) used



DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



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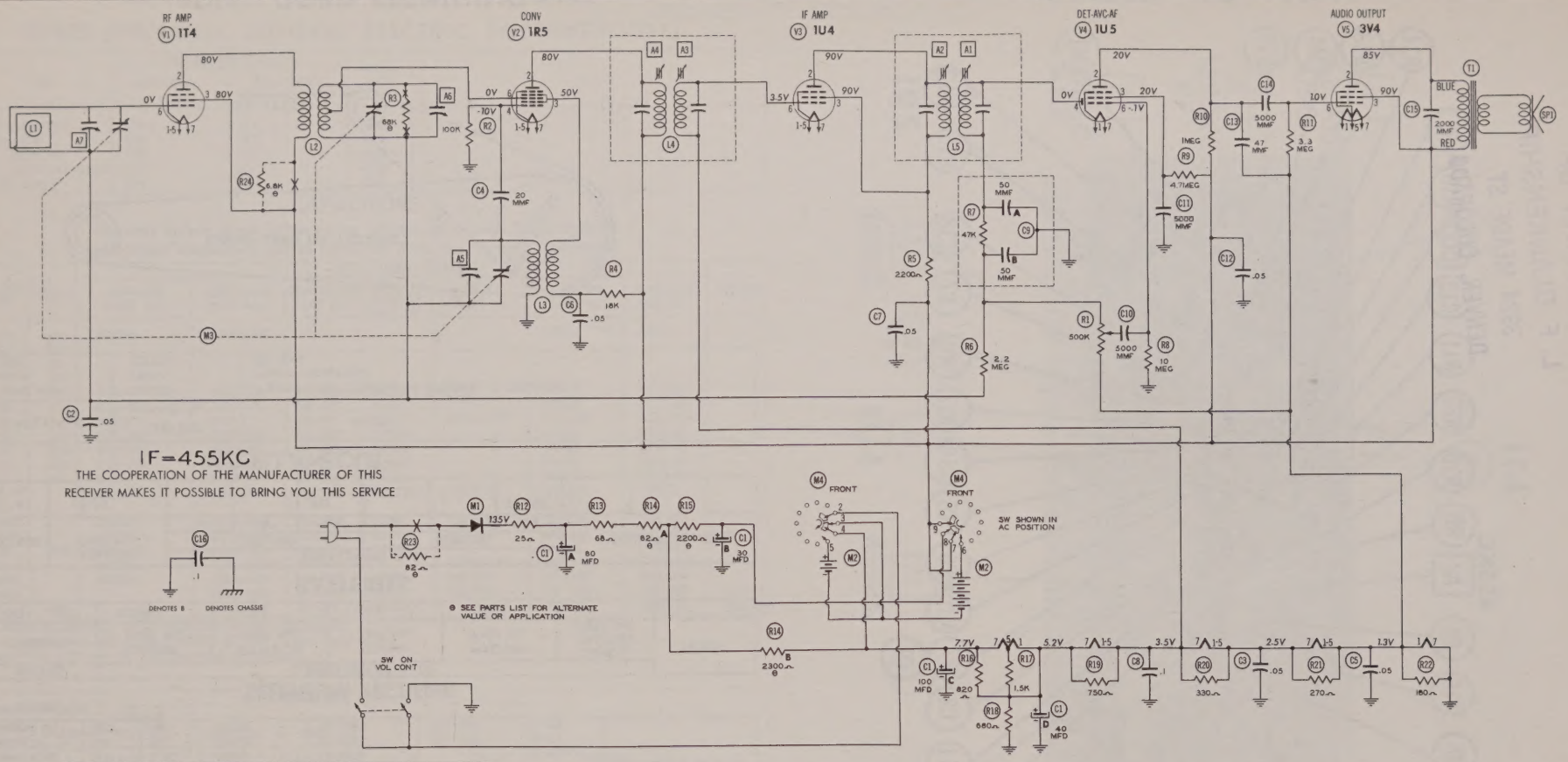
AIRLINE
MODEL 25GHM-1073A (Early & Late)



REVISED SW CONNECTIONS USED IN SOME MODELS FOR REDUCING "B" BATTERY DRAIN

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1T4	*	†4.5KΩ	†4.5KΩ	0Ω	*	2.7Meg	*
V 2	1R5	*	†4.5KΩ	†22KΩ	100KΩ	*	2.7Meg	*
V 3	1U4	*	†2.4KΩ	†2.4KΩ	INF	*	46Ω	*
V 4	1U5	*	†1Meg	†4.7Meg	550KΩ	INF	10Meg	*
V 5	3V4	*	†2.8KΩ	†2.4KΩ	*	*	3.3Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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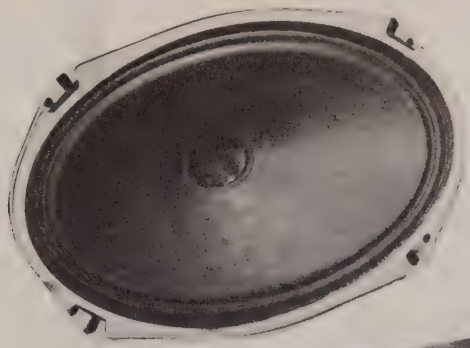
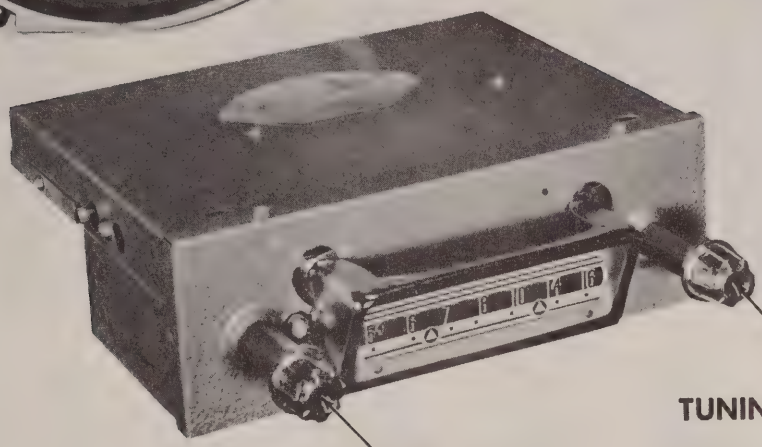
DENVER, COLORADO

AIRLINE
MODEL 61-6795





AIRLINE
MODEL 61-6795

TRADE NAME	Airline Model 61-6795
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Battery Operated Automobile Superheterodyne Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 (or) 6AT6 Det.-AVC-AF Amp., 6V6GT Audio Output, 6X5GT Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.2 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1610KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455KC (400~mod)	High frequency end stop	Across voice	A1, A2, A3, A4	Adjust for maximum output.
2.		"	1610KC	"	"	A5	"
3.	68MMF	High side to antenna receptacle. Low side to chassis.	1400KC	Tune to 1400KC signal	"	A6, A7	Adjust for maximum output. Repeat steps 2 and 3.
4.	With radio installed in car and antenna fully extended tune to a weak station near 1400KC and adjust A7 for maximum volume.						

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amp.	6BA6	6BA6	7BK	
V4A	Det-AVC-AF Amp.	6AV6	6AV6	7BT	
B	Det-AVC-AF Amp.	6AT6	6AT6	7BT	
V5	Audio Output	6V6GT	6V6GT	7S	
V6	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR LINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■20	350	CE-86	AFH3-107		CO80		FP345.8	TVL-3632	
B	▲20	350								
C	20	25								
C2	100		CC-101	1468-0001		5W5T1		MC-235	1FM-31	
C3	.047	200	C-503-2	P288-05	DF-503	PTE4S5		PT415	2TM-35	
C4	.006	200	C-602-4	P288-006	D6-602	PJ2D6	GP2-333-602	PT426	2TM-D6	
C5	.047	200	C-503-2	P288-05	DF-503	PTE4S5		PT415	2TM-S5	
C6	5		CC-50	SI5	D6-050		GP1K-050	NT-555	5GA-V5	
C7	40		CC-400	SI40	D6-400		GP1K-400	UC-5439	5GA-Q39	
C8A	220									
B	5000									
C	5000		*PC-151	*PA-113-2	*PC-151		*1408-02		*103C5	
D	250									
E										
C9	.005	200	C-502-2	P288-005	D6-502	PJ2D5	GP2-333-502	PT425	2TM-D5	
C10	.01	600	C-103-6	P688-01	D6-103	PTE6S1	GP2-333-103	PT611	6TM-S1	
C11	.5	100	C-504-1	VHC-36		MP2P5		RF-480	HC-3	
C12	.5	100	C-504-1	VHC-36		MP2P5		RF-480	HC-3	
C13	.008	1600	C-802-16	P1688-008		PTE16D8		PT1628	MB-D8	

* Items C8A, C8B, C8C, C8D, C8E, R9A, R9B and R9C are combined in one unit.
When replacing items separately items C8D and C8E should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR LINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750KΩ	½	RV-57	Q13-137	AG-79-Z	B-70-S	U-51	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	470KΩ	½	R474	BTS-470K	
R3	150Ω	½	R151	BTS-150	Note 1.
R4	150KΩ	½	R154	BTS-150K	
R5	47KΩ	½	R473	BTS-47K	
R6	1500Ω	½		BTS-1500	Note 2.
R7	6800Ω	2	R682-2	BTB-6800	
R8	2.2Meg	½	R225	BTS-2.2Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIR LINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R9A	6.8Meg	½	* PC-151	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R10	330Ω	½	R331	BTS-330	
R11	1000Ω	1	R102-1	BTA-1000	
R12	100Ω	½	R101	BTS-100	
R13	100Ω	½	R101	BTS-100	

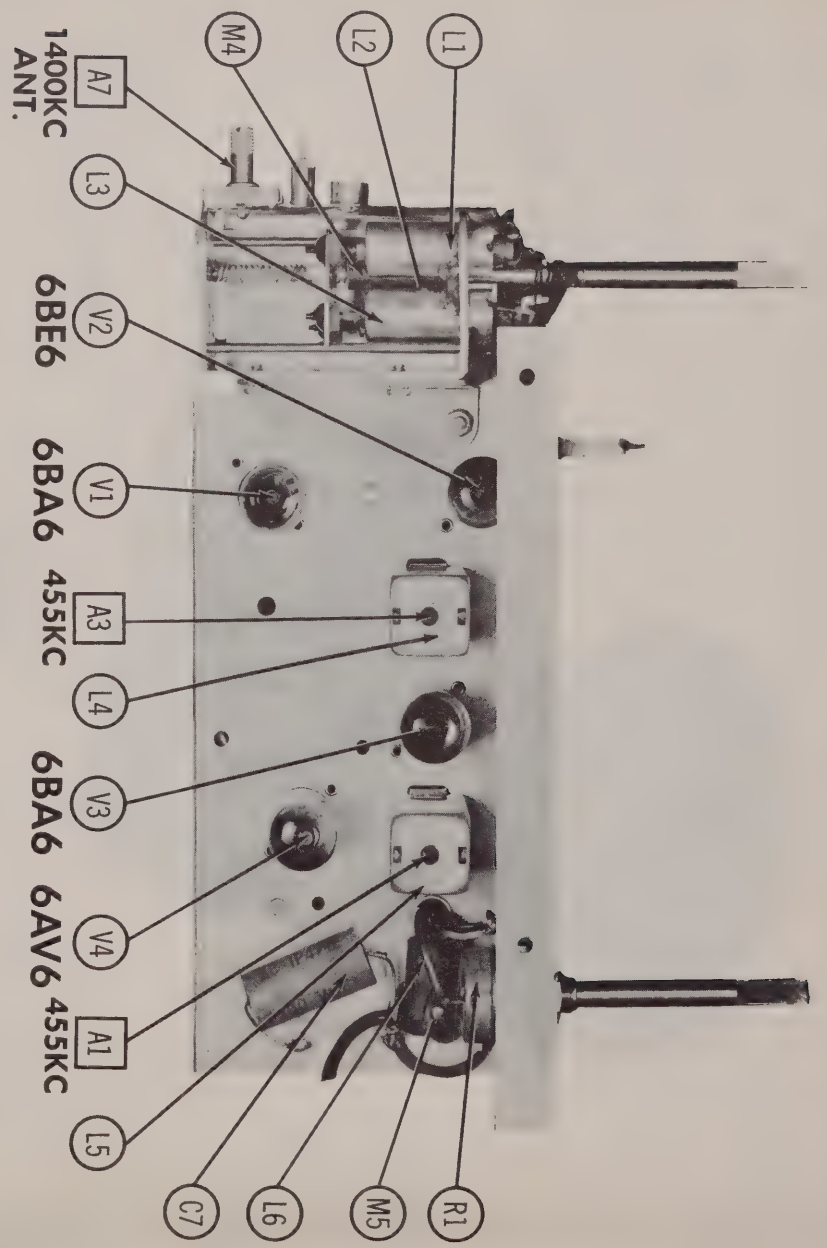
* Items R9A, R9B, C8A, C8B, C8C, C8D, C8E are combined in one unit.
Note 1. Some models may sue a 220Ω resistor in this application.
Note 2. Some models may sue a 1000Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIR LINE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	6.3VCT @2.6A	400VCT .053A			TV-100		P2971	V-16K	V3801	T-22R29①

① Drill new mounting holes.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AIRLINE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	5.1KΩ	4Ω	TD-4502	A-3877	A-2930	S-3X	Z1001	TS-24S51	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"X9"	PM	4Ω	PM-901	ST-810 Mod P69-V	69A3	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	19Ω						Part of tuner, Tuner Part # PT-500M
L2	RF Coil	13Ω						Part of Tuner
L3	Osc. Coil	.5Ω	2.4Ω					Part of Tuner
L4	Input IF	18Ω	18Ω	1655-16	16-6758	BC-352	12-C1	
L5	Output IF	18Ω	18Ω	1655-16	16-6758	BC-353	12-C2	
L6	Fil. Choke	0Ω		L203			5221	1.5 Microhenries
L7	Vibrator Hash Choke	0Ω		L202A			5221	17 Microhenries

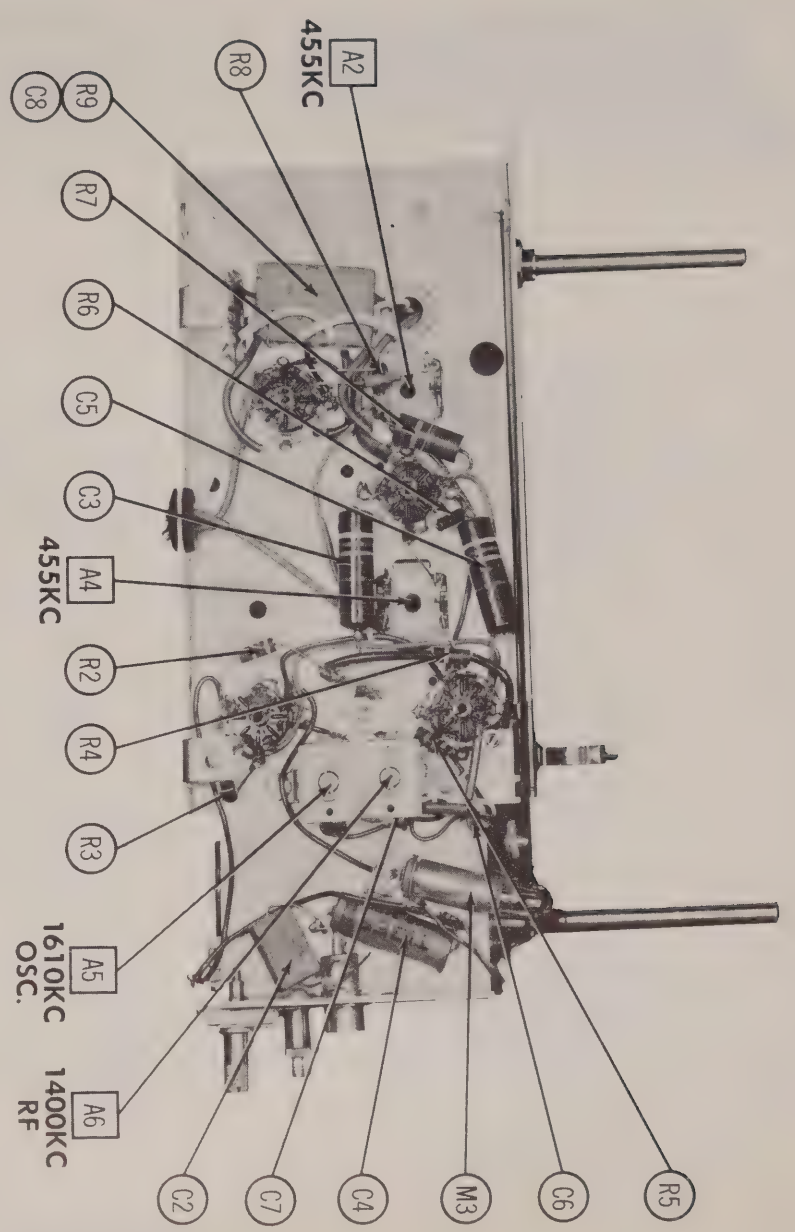
VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				NOTES
				AIRLINE PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	
M1	Interrupter	6.3V	115v	V-83A	5301	859	5301	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AIRLINE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A	A200	FH226	307014. (SFE-14A)	155014	SFE14	HDI

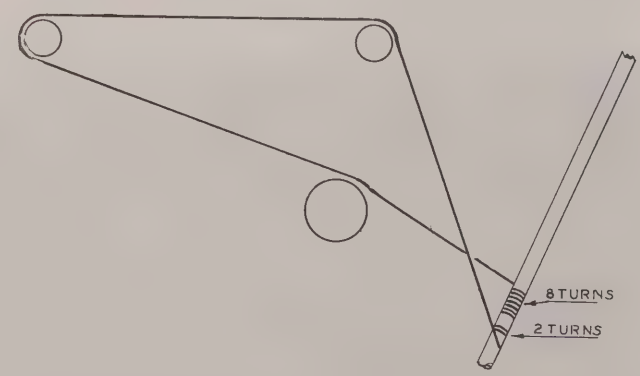
CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

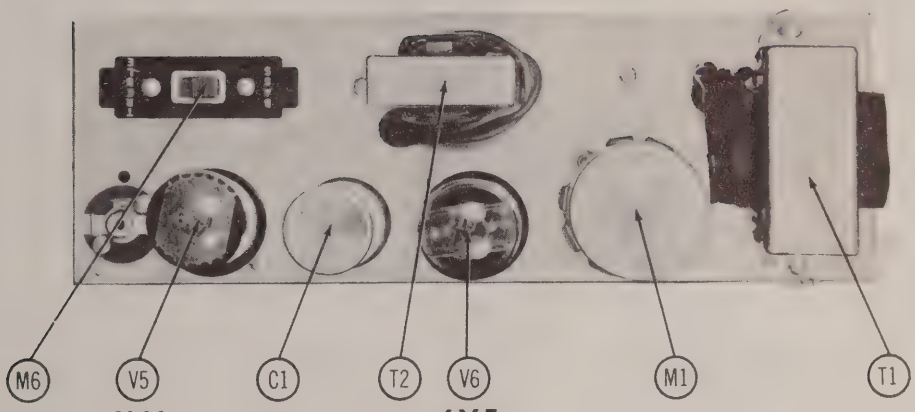
MISCELLANEOUS

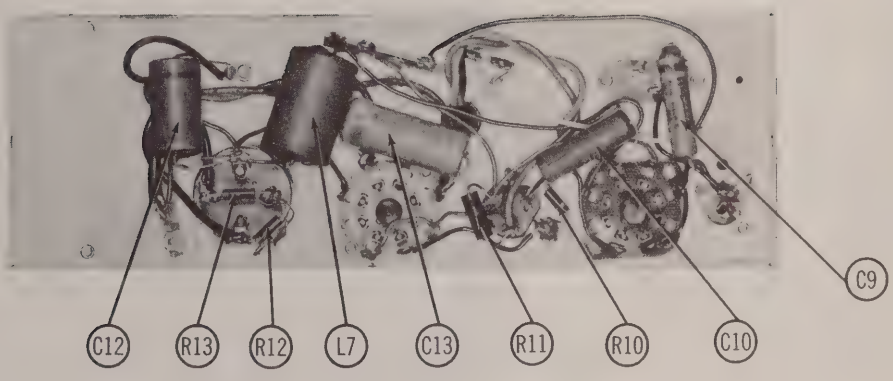
ITEM No.	PART NAME	PART No.	NOTES
M3	Dial light	T47	# 47 bayonet
M4	Tuner	PT-500M	Permeable
M5	Spark plate		
M6	Switch	SS-1	Tone (s. p. s. t. slide)
A7	Trimmer cap	CT-1	Antenna compensator
A6	Trimmer cap	CT-2	R. F. trimmer
A5	Trimmer cap	CT-3	Osc. trimmer
	Case	H430	Less cover
	Cover	H431	Front, with mounting bushings
	Knob	H310E	(2) off-on volume and tuning
	Dial scale	D430	
	Escutcheon	E430	
	Pointer	PS430	

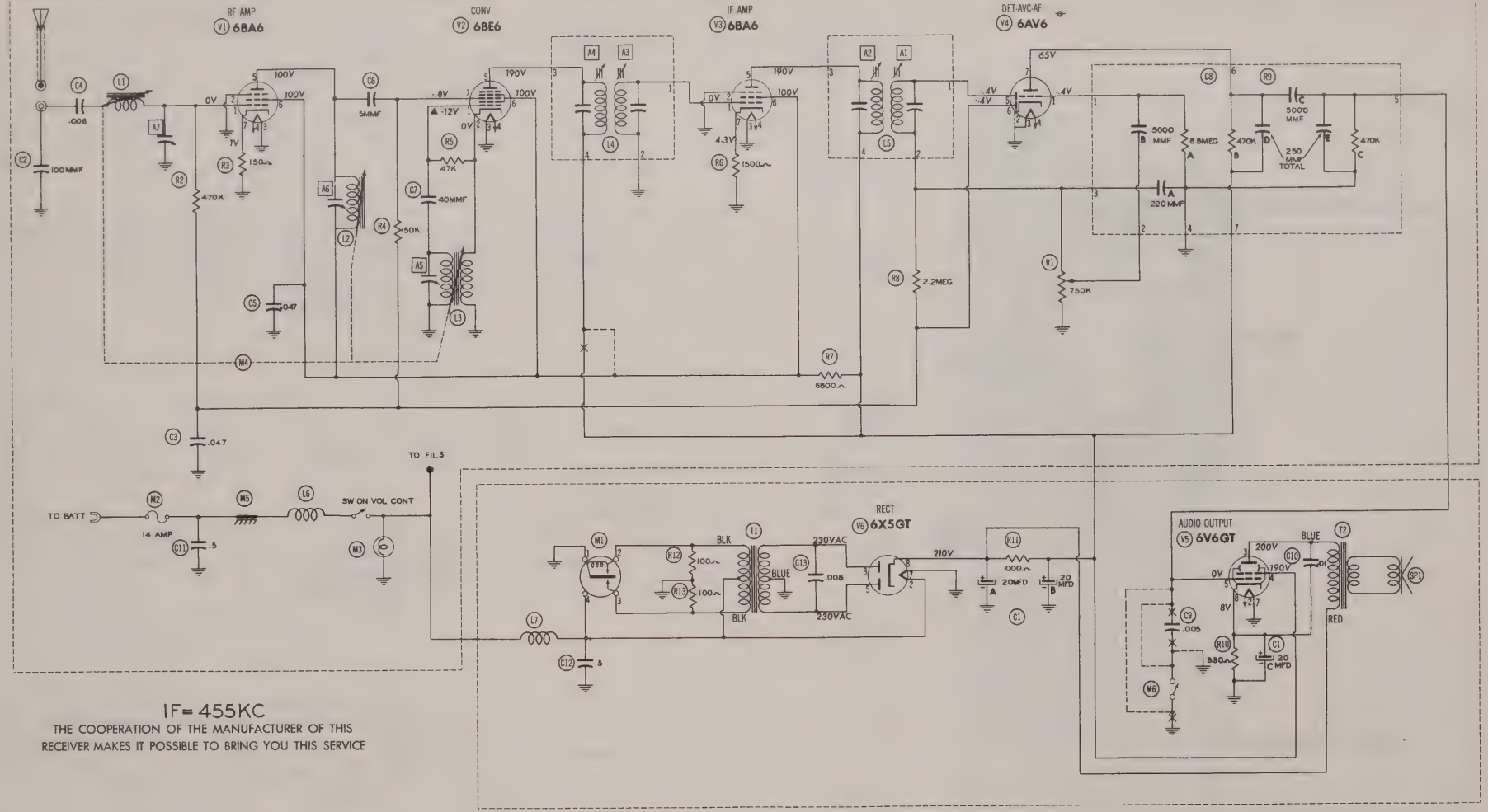


DRIVE CORD STRINGING

PROPERTY
L. F. BLANKENSHIP
3834 TEJON ST.
DENVER, COLORADO







RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	3.4Meg	0Ω	0Ω	.7Ω	↑ 7.5KΩ	↑ 7.5KΩ	150Ω	
V 2	6BE6	47KΩ	.5Ω	0Ω	.7Ω	↑ 1KΩ	↑ 7.5KΩ	3.1Meg	
V 3	6BA6	18Ω	0Ω	0Ω	.7Ω	↑ 1KΩ	↑ 7.5KΩ	1.5KΩ	
V 4	6AV6	6.8Meg	0Ω	0Ω	.7Ω	750KΩ	3Meg	↑ 470KΩ	
V 5	6V6GT	INF	.7Ω	↑ 275Ω	↑ 1KΩ	470KΩ	INF	0Ω	330Ω
V 6	6X5GT	INF	.7Ω	285Ω	INF	285Ω	INF	0Ω	2Meg

a TAKEN WITH VACUUM TUBE VOLTMETER.
↑ MEASURED FROM PIN 8 OF V6.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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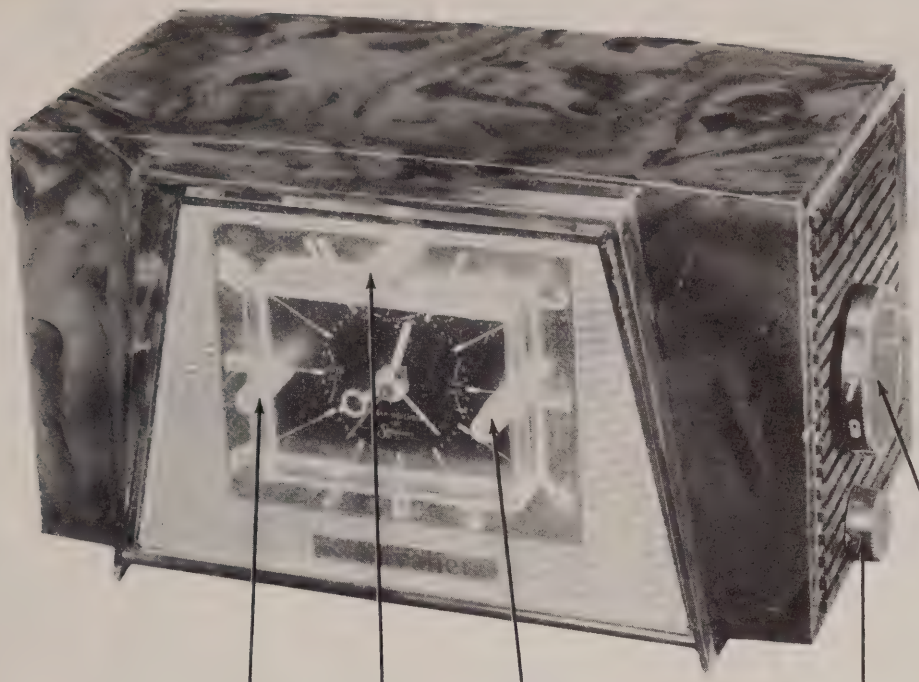
242-3

1 - DC voltage measurements are at 20,000 ohms per volt, AC voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

CAVALIER
MODEL 5C1



PROPERTY OF
L. F. BLANKENSHIP
3024 MEADE ST.
DENVER, COLORADO

CAVALIER
MODEL 5C1

TRADE NAME	Cavalier Model 5C1
MANUFACTURER	Hinners-Galanek Radio Corp., 2514 Broadway, Long Island City 6, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50B5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

CAVALIER MODEL 5C1

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		CAVALIER PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50B5	50B5	7BZ	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CAVALIER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	70	150		PRS150/50-30-20		BBRD8415		3N536	TVA-2460	Red
B	30	150								Blue
C2	.047	200		P288-047	DF-503	PJ2S47		PT4147	2TM-S47	
C3	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C4	.002	600		P688-002	D6-202	CUB6D2	GP2L-202	PT622	6TM-D2	
C5	250	500		1469-00025		5W5T25		MC240	1FM-325	
C6	.002	600		P688-002	D6-202	CUB6D2	GP2L-202	PT622	6TM-D2	
C7	10000			BPD-01	D6-103	K082	811-01	DC-511	5HK-S1	
C8	.035	600		P688-035		CUB6S3		PT6135	6TM-S35	
C9	.047	200		P288-047	DF-503	PJ2S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAVALIER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	120-108	Q13-133	AG-60-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A

RESISTORS

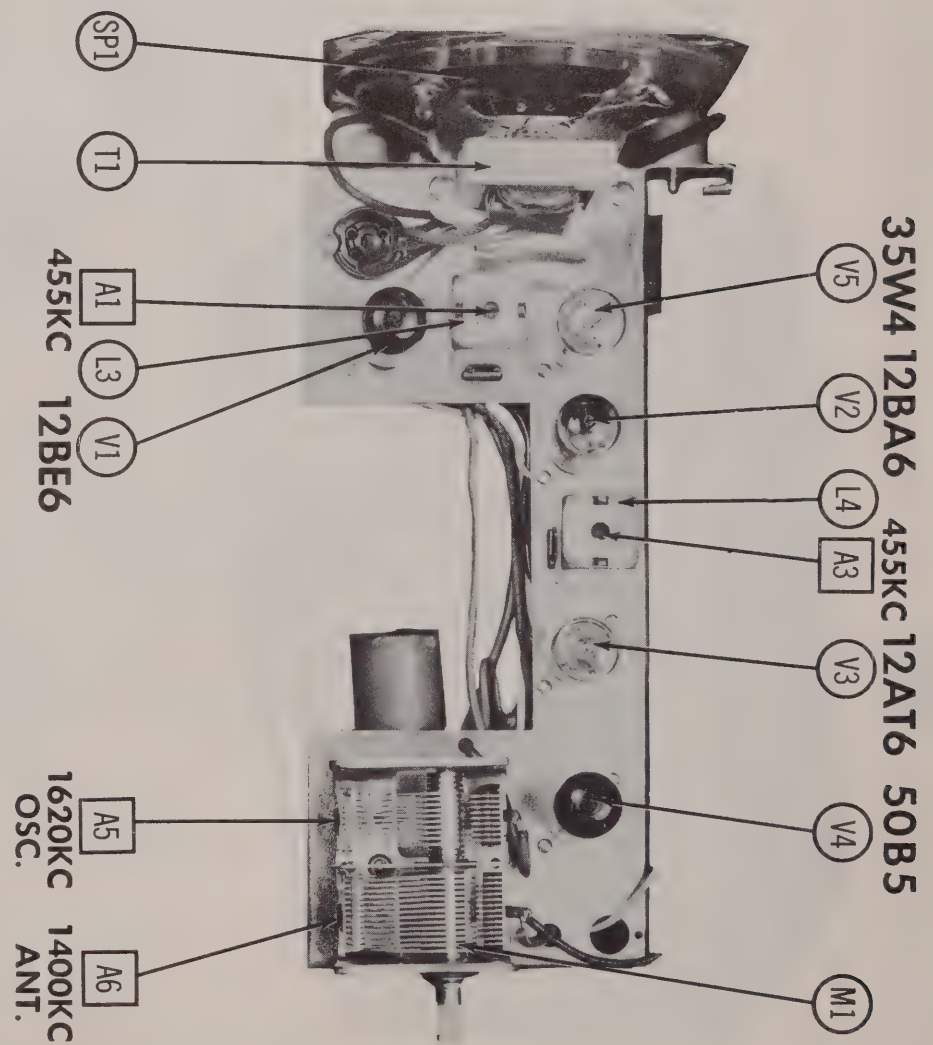
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAVALIER PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	330Ω	½		BTS-330	
R4	2.2Meg	½		BTS-2.2Meg	
R5	10 Meg	½		BTS-10 Meg	
R6	330KΩ	½		BTS-330K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAVALIER PART No.	IRC PART No.	
R7	560KΩ	½		BTS-560K	
R8	150Ω	½		BTS-150	
R9	1800Ω	2		BTB-1800	
R10	18Ω	½		BTS-18	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CAVALIER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.1KΩ	3.3Ω		A-3332	A-3025	S-1X ①	Z1101	TS-24S50 ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CAVALIER PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω		ST-113 Mod. P4-X	4A07	

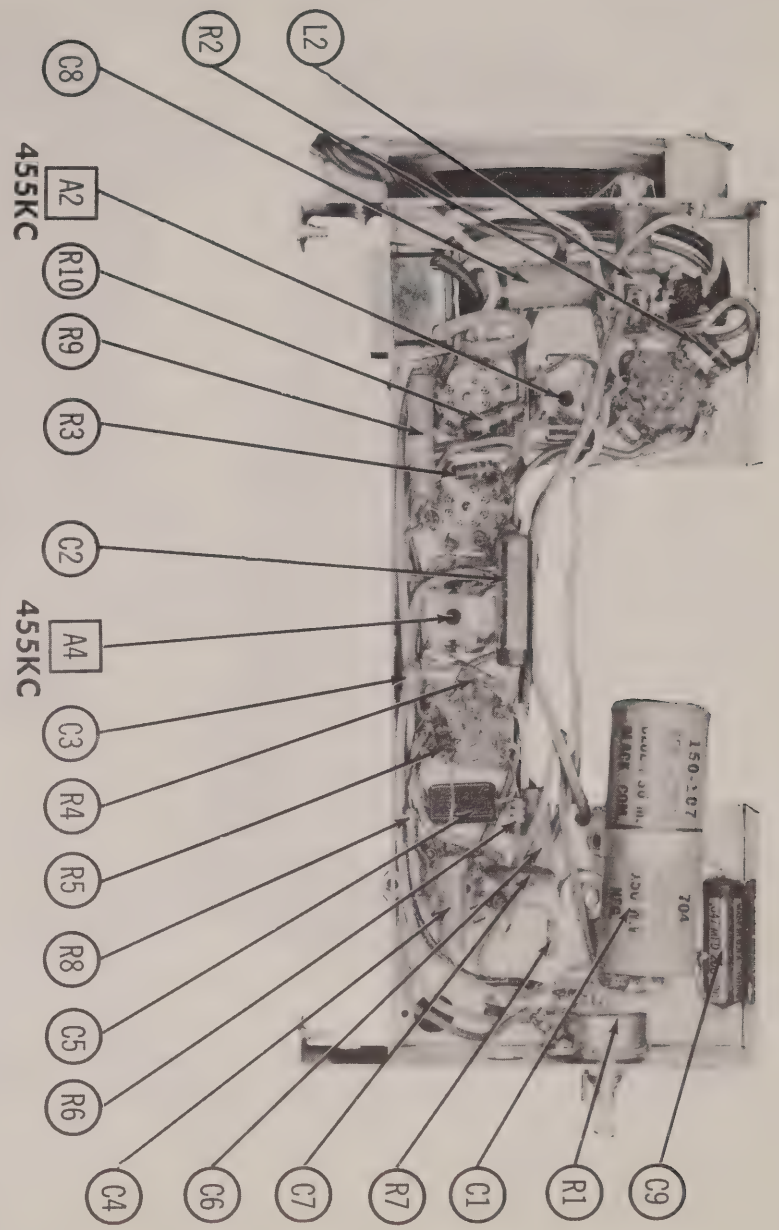
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CAVALIER PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	.1Ω	1.8Ω					
L2	Osc. Coil	.5Ω	6Ω		14-1073		69-Osc.	
L3	Input IF	25Ω	25Ω	130-104	16-6758	BC-352	12-C1	
L4	Output IF	25Ω	25Ω	130-104	16-6758	BC-353	12-C2	

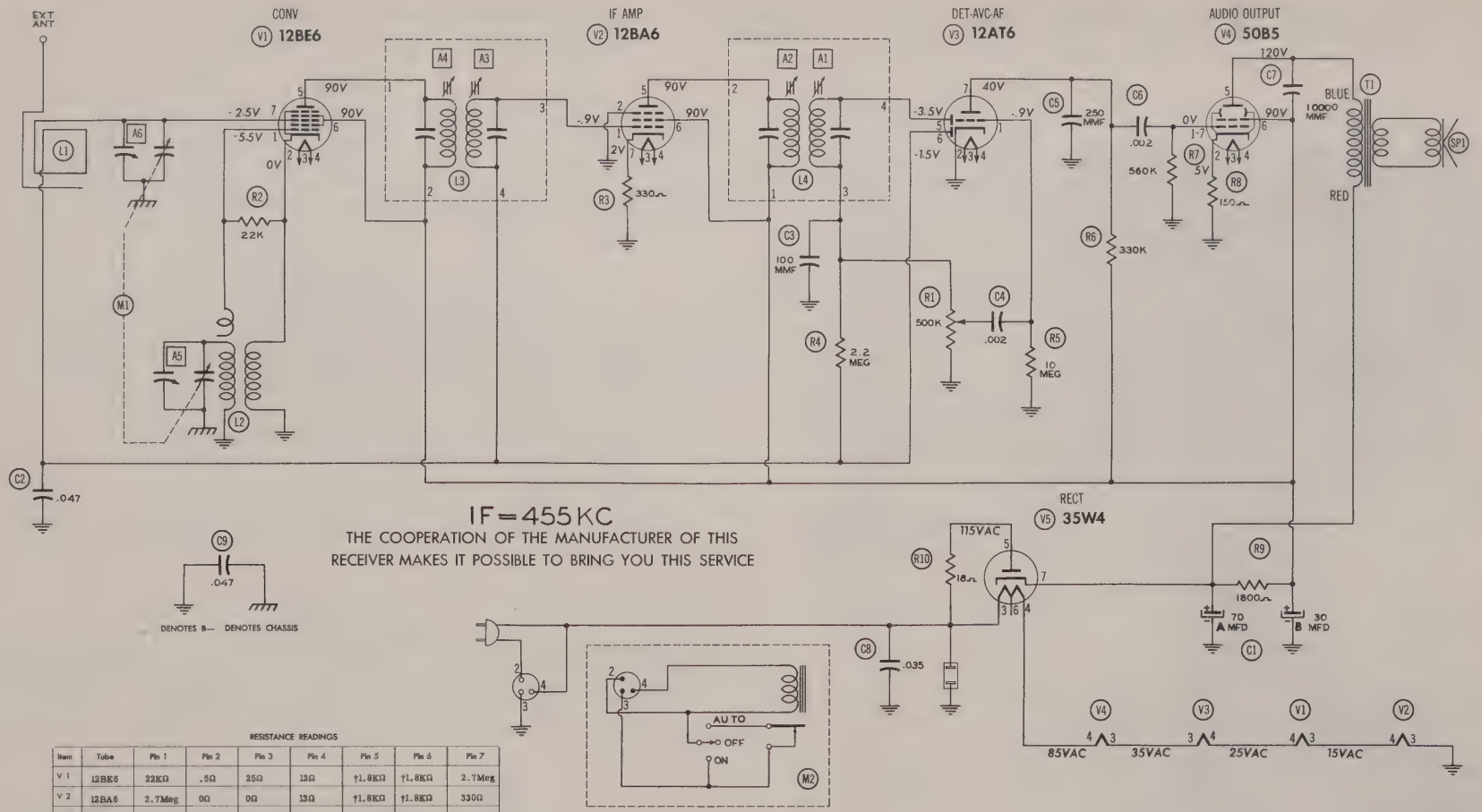
MISCELLANEOUS

ITEM No.	PART NAME	CAVALIER PART No.	NOTES
M1	Tuning cap	*	2 section (40-467MMF, 31-190MMF)
M2	Clock		

CHASSIS—BOTTOM VIEW



CAVALIER MODEL 5C1



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	25Ω	13Ω	†1.8KΩ	†1.8KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	0Ω	13Ω	†1.8KΩ	†1.8KΩ	330Ω
V 3	12AT6	10Meg	0Ω	37Ω	25Ω	500KΩ	2.7Meg	†330KΩ
V 4	50B5	560KΩ	150Ω	37Ω	87Ω	†1.8KΩ	†150Ω	560KΩ
V 5	35W4	0Ω	INF	125Ω	87Ω	145Ω	95Ω	200KΩ

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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DAVID BOGEN
MODELS PR, RC

DAVID BOGEN
MODELS PR, RC

TRADE NAME	David Bogen Models PR, RC
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N.Y.
TYPE SET	AC Operated Pre-Amplifier (Model PR) & Remote Control Unit (Model RC)
TUBES (Two)	Types 6SC7 Pre-Amp., 12AX7 AF Amp.
POWER SUPPLY	110-120 Volts AC

THESE TWO UNITS ARE DESIGNED TO OPERATED WITH BOGEN AMPLIFIERS H010-1 OR D010. MODEL H010 IS COVERED IN PHOTOFACT SET 183, FOLDER 5 AND MODEL D010 IS COVERED IN PHOTOFACT SET 231, FOLDER 5.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		David Bogen PART No.	STANDARD REPLACEMENT		
V1	Pre-Amplifier	6SC7	6SC7	8S	
V2	AF Amplifier	12AX7	12AX7	9A	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲10	450		AFH2-47		B037		WP433.6	TVL-2750	
B	▲10	450								
C2	.02	400		P488-02	DD-203	PTE4S2		PT412	4TM-S2	
C3	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C4	.03	400		P488-03		PTE6S3		PT413	6TM-S3	
C5	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	PT411	4TM-S1	
C6	.03	200		P488-03		PTE6S3		PT413	6TM-S3	
C7	.25	200		P288-25		PJ2P5		PT4025	2TM-P25	
C8	.25	200		P288-25		PJ2P5		PT4025	2TM-P25	
C9	.047	400		P488-047	DF-503	PTE4S47		PT4147	4TM-S47	
C10	.003	600		P688-003		PTE6D3	GP2-333-302	PT623	6TM-D3	
C11	.03	200		P488-03		PTE6S3		PT613	6TM-S3	
C12	.1	400		P488-1	DF-104	PTE4P1		PT401	4TM-P1	
C13	10	450		PRS450/10		BR1045A		TC72	TVA-1705	
C14	500	500		1468-0005	D6-501	5W5T5	370-CB-501M	MC245		
C15	500	500		1468-0005	D6-501	5W5T5	370-CB-501M	MC245		
C16	500	500		1468-0005	D6-501	5W5T5	370-CB-501M	MC245		
C17	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C18	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C19	.05	400		P488-05	DF-503	PTE4S5		PT415	4TM-S5	
C20	.5	400		P488-5		PJ4P5		PT405	4TM-P5	
C21	.5	200		P288-5		PJ2P5		PT405	2TM-P5	
C22	.25	400		P488-25		PJ4P25		PT4025	4TM-P25	
C23	.25	200		P288-25		PJ2P5		PT4025	2TM-P25	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	V284	Q11-133	A47-500K-S	B-59	U-50	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not R eq.	Attach to R1A
R2A	500KΩ	½	V284	Q11-133	A47-500K-S	B-59	U-50	Treble
B	Shaft		Not .Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	V-202-C	Q13-133	A47-500K-Z	B-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A

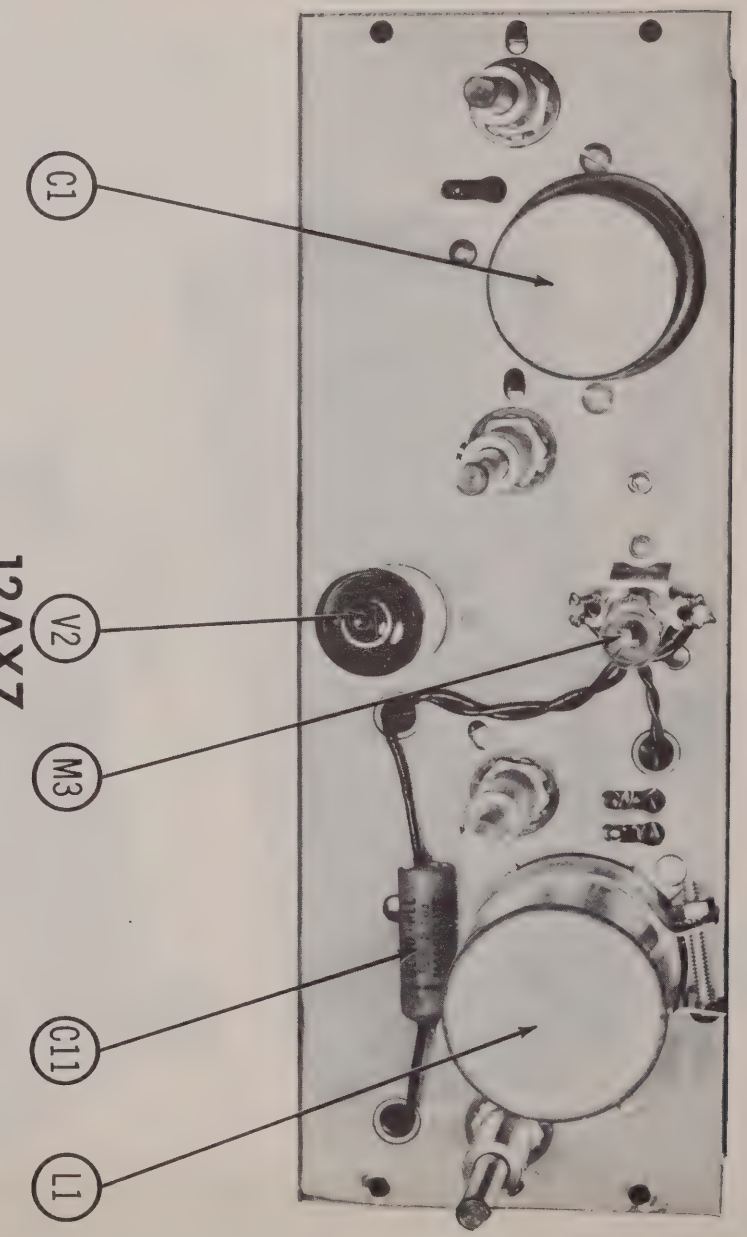
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R4	2.2Meg	½		BTS-2.2Meg	
R5	2.2Meg	½		BTS-2.2Meg	
R6	2.2Meg	½		BTS-2.2Meg	
R7	2.2Meg	½		BTS-2.2Meg	
R8	82KΩ	½		BTS-82K	
R9	6200Ω	½		BTS-6200	
R10	150KΩ	½		BTS-150K	
R11	470KΩ	½		BTS-470K	
R12	1500Ω	½		BTS-1500	
R13	33KΩ	½		BTS-33K	
R14	100KΩ	½		BTS-100K	
R15	220KΩ	½		BTS-220K	
R16	1000Ω	½		BTS-1000	
R17	22KΩ	½		BTS-22K	
R18	47KΩ	½		BTS-47K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R19	150KΩ	½		BTS-150K	
R20	220KΩ	½		BTS-220K	
R21	100KΩ	½		BTS-100K	
R22	220KΩ	½		BTS-220K	
R23	100KΩ	½		BTS-100K	
R24	47KΩ	½		BTS-47K	
R25	1Meg	½		BTS-1Meg	
R26	47KΩ	½		BTS-47K	
R27	470KΩ	½		BTS-470K	
R28	1Meg	½		BTS-1Meg	
R29	68KΩ	½		BTS-68K	
R30	100KΩ	½		BTS-100K	
R31	6800Ω	½		BTS-6800	
R32	6800Ω	½		BTS-6800	
R33	6800Ω	½		BTS-6800	

MODEL RC

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .01A	125VDC .005A			T-393	PS-8415①	P-3046			

① Do not use 6.3V winding.

TONE CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L1		1.4KΩ	37 Hy.	T-550-3					

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	David Bogen PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.005A	H-375	8Y1	1214A	8S35	35	

FUSES

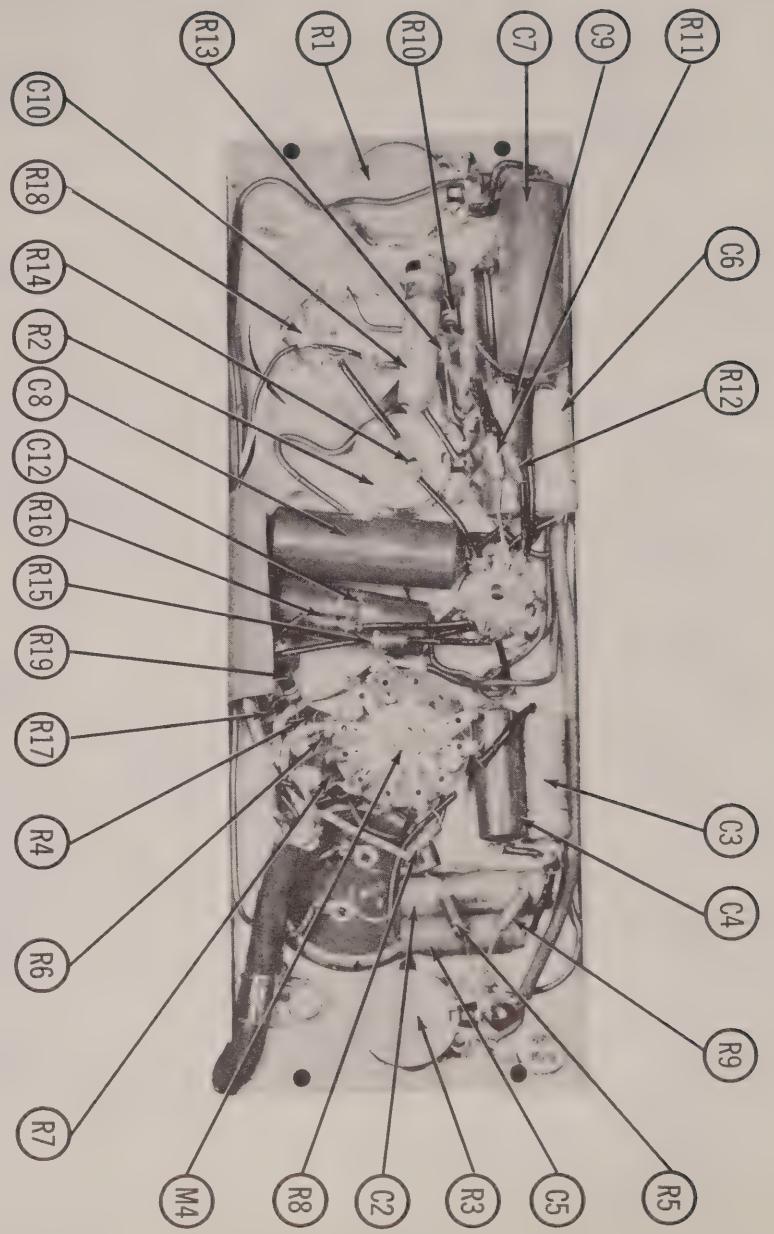
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	1A 250V			312001 (3AG-1A)	342001	AGC1	HKP

MISCELLANEOUS

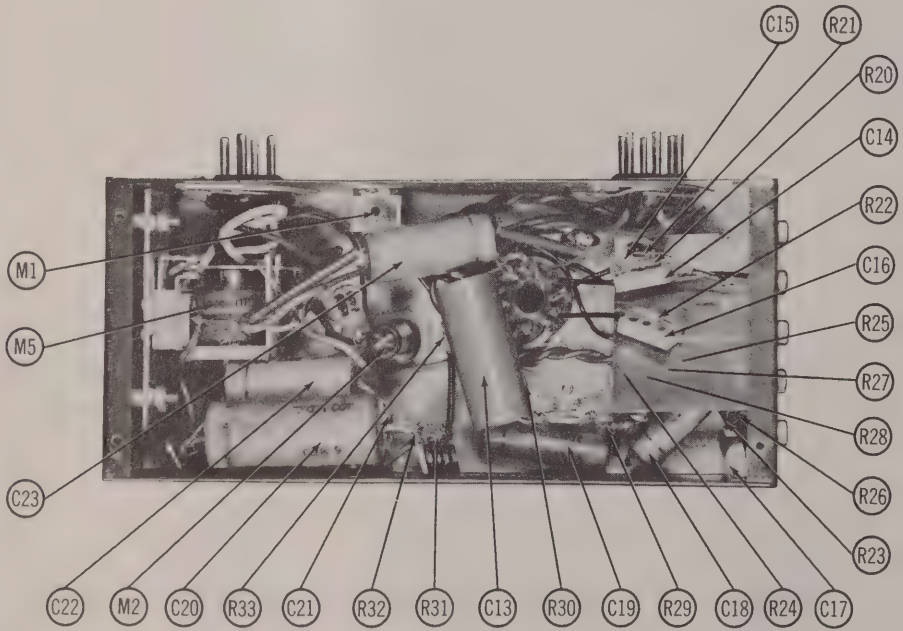
ITEM No.	PART NAME	David Bogen PART No.	NOTES
M3	Dial Light		#51
M4	Switch	S371F	Function Selector 8 pos.
M5	Relay Coil	H358	

MODEL RC

CHASSIS—BOTTOM VIEW



MODEL PR



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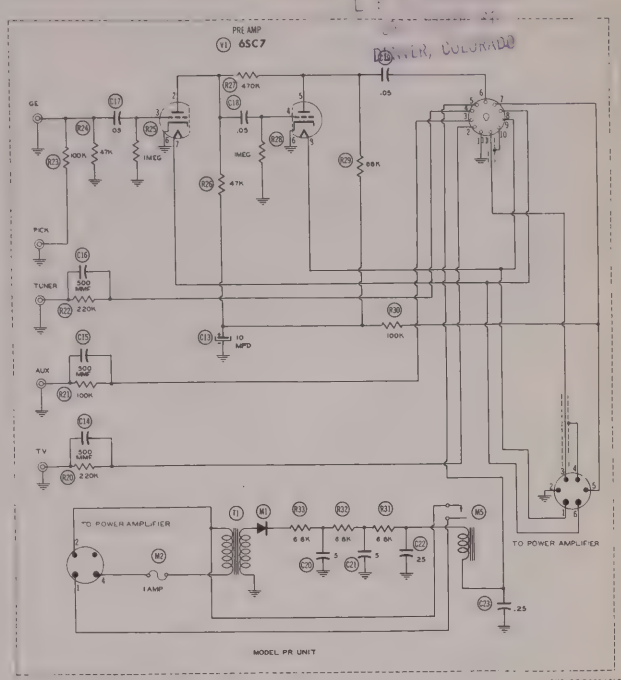

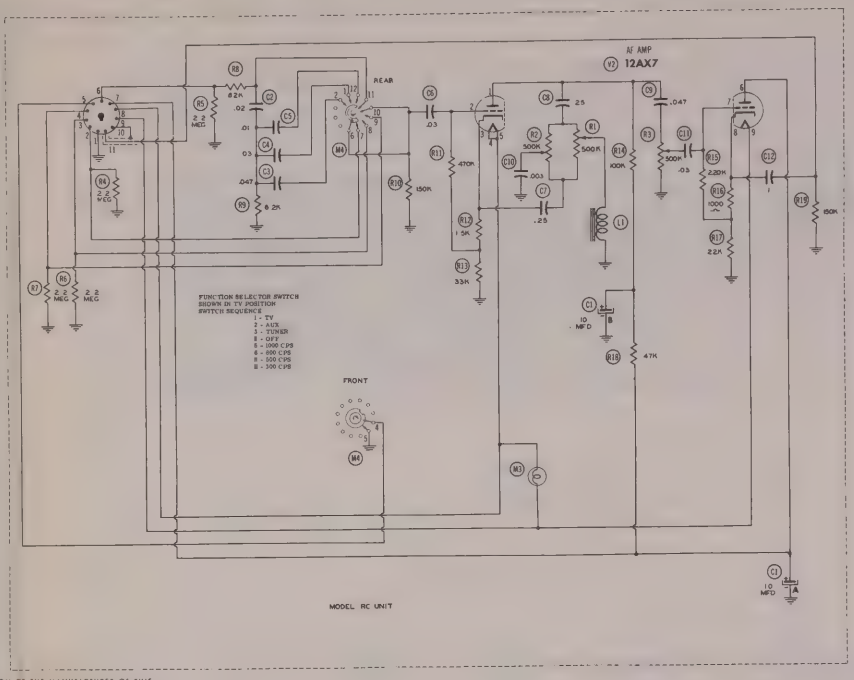

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SC7	0Ω	■147KΩ	1Meg	1Meg	■150KΩ	0Ω	INF	INF	
V 2	12AX7	■147KΩ	500KΩ	34.5KΩ	INF	100KΩ	■0Ω	240KΩ	23KΩ	INF

■ MEASURED FROM PIN 5 OF POWER SOCKET

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MODEL 2841

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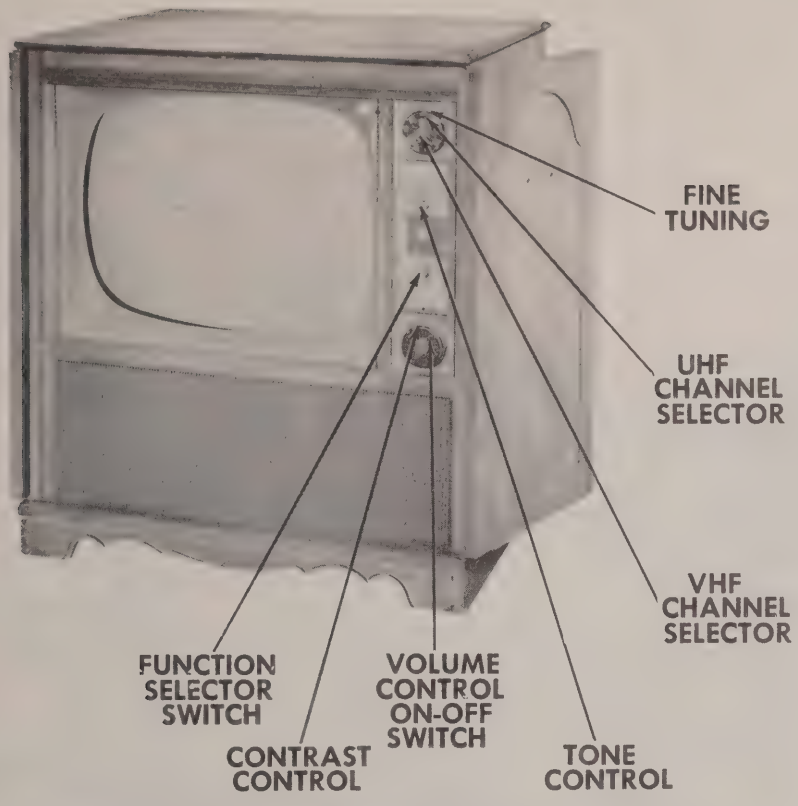

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PACKARD-BELL MODEL 2841

TRADE NAME	Packard-Bell Models 2841, 2942 (Ch. 2840) 3042, 3142 (Ch. 3040-1)
MANUFACTURER	Packard-Bell Co., - Service Div. 11th & Hope Streets, Los Angeles 15, Calif.
TYPE SET	Radio-TV combination receiver
TUBES	Twenty-nine
POWER SUPPLY	110-120 Volts AC-60 cycle RATING 2.2 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) AM Radio 540-1620KC, AM IF 455KC.

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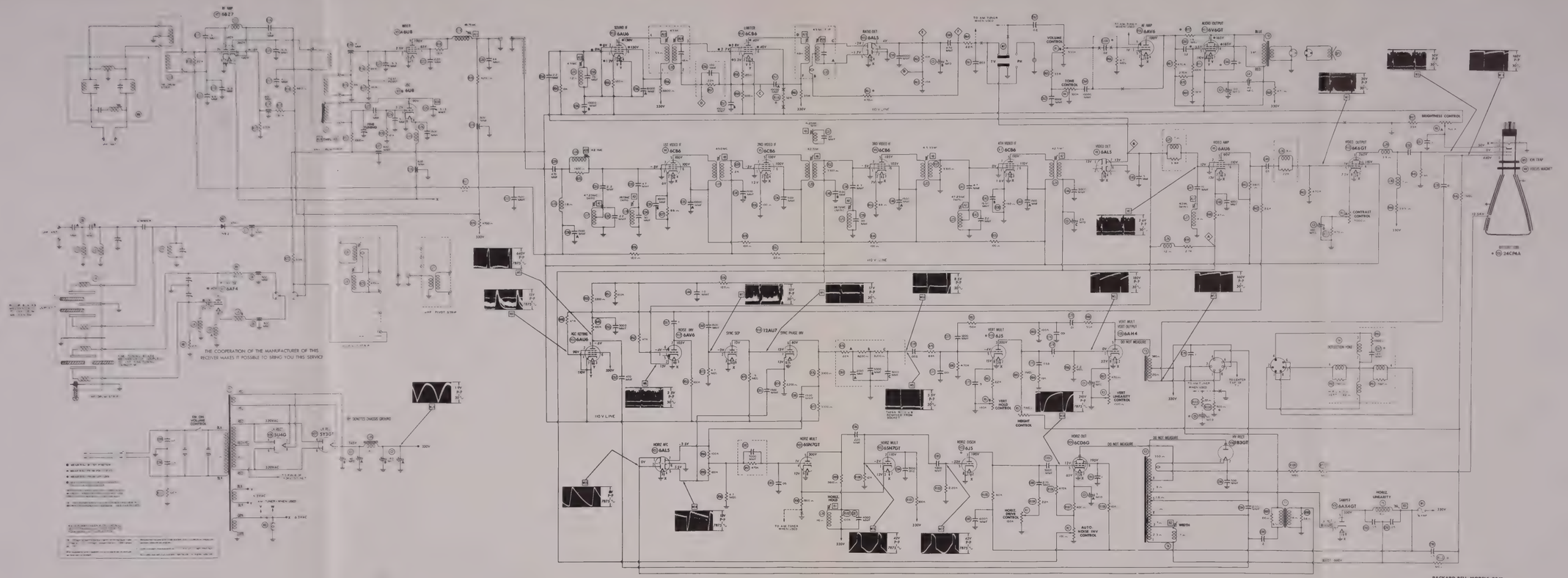
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CHASSIS TOP VIEW

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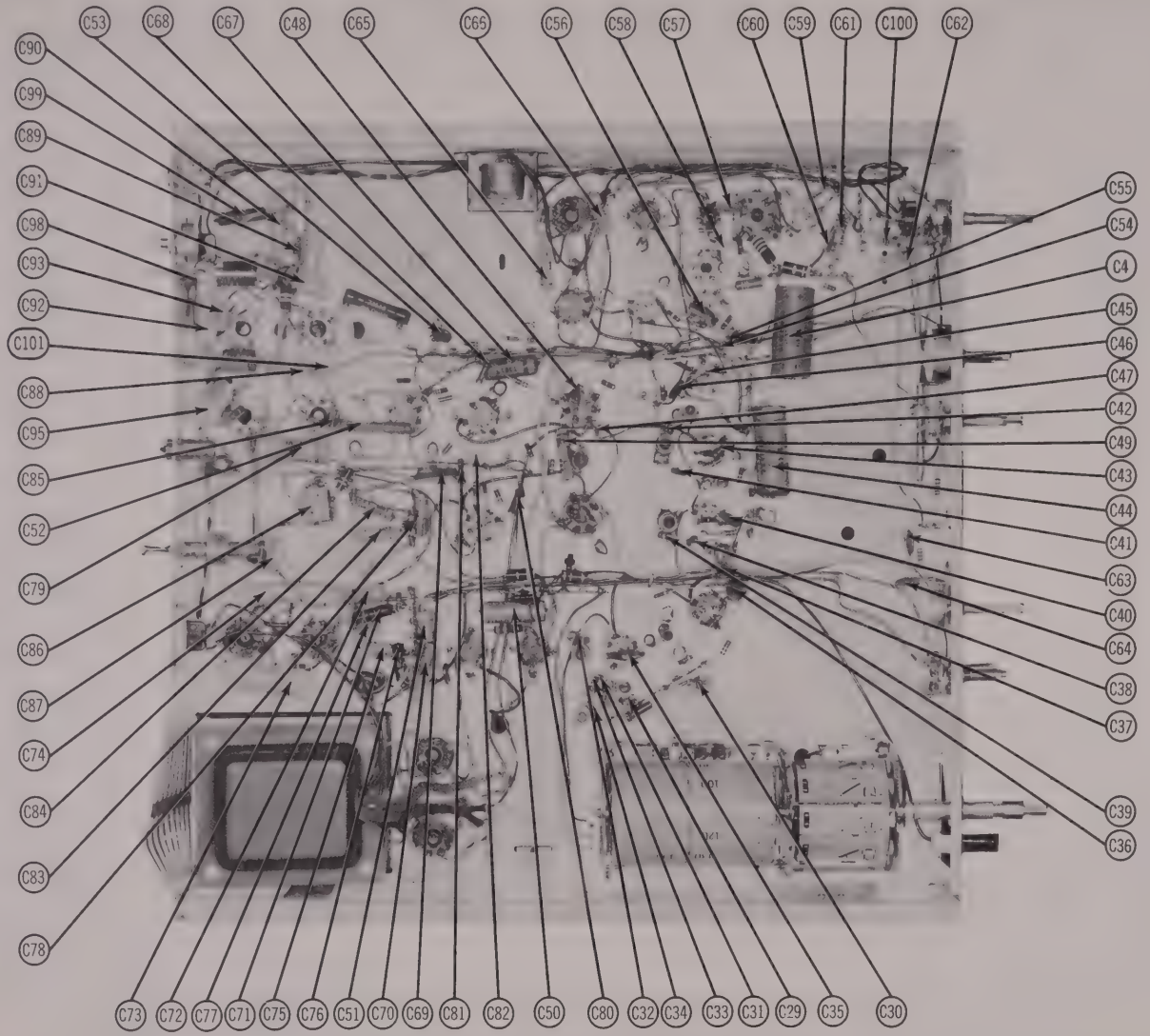
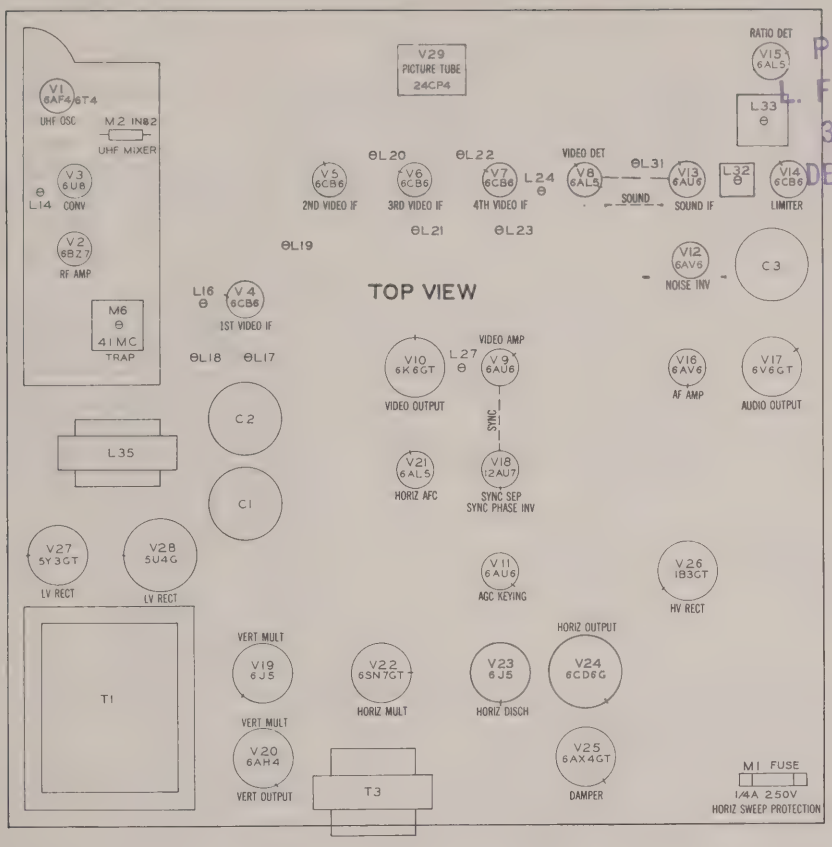


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V27, V28

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V3, V4, V5, V6, V7, V8, V17 (V1 UHF only)
No pic, no sound, has snow - V2, V3, V4
No pic, has sound, has raster - V9, V10, V29
Has pic, no sound - V13, V14, V15, V16, V17
Overloaded picture - V11

SYNC FAILURE
No vert. sync - V18, V19, V20
No horiz. sync - V18, V21, V22
No vert. or horiz. sync - V18

SWEEP FAILURE
No raster, has sound -V22, V23, V24, V25, V26, V29, Fuse (M1)
No vertical deflection - V19, V20
Poor vert. linearity or foldover -V19, V20
Poor horiz. linearity or foldover -V22, V23, V24, V25
Narrow picture - V22, V23, V24, V25, V26, V27, V28
Vert. off freq. - V18, V19, V20
Horiz. off freq. - V18, V21, V22

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V22) from its socket to disable the high voltage.
Allow a 10 minute warm-up period for receiver and test equipment.

VIDEO IF ALIGNMENT

Remove the 6AV6 (V12) from its socket.
Connect the negative lead of a 3 volt battery to the ungrounded side of C44. Connect the positive lead to chassis. In step 7 under "Signal Generator Coupling" the converter tube is a 6J6 on models which use VHF tuner #10534.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	.001MFD	High side thru .001MFD to center pin of IF plug on top of tuner (Remove plug from socket) Low side to cable shield.	47.25MC (Unmod)	Any	DC probe to point (B). Common to point (A).	A1, A2	Use maximum output from signal generator . Adjust for MINIMUM deflection.
2.	"	"	39.75MC	"	"	A3, A4	"
3.	"	"	41.25MC		"	A5	Attenuate signal generator to maintain 2.5 to 3 volts at VTVM. Adjust for MINIMUM deflection.
4.	"	"	42.5MC	"	"	A6, A7	Attenuate signal generator to maintain 2.5 to 3 volts at VTVM. Adjust for maximum deflection.
5.	"	"	45.35MC	"	"	A8	Attenuate signal generator to maintain 2.5 to 3 volts at VTVM. Adjust for maximum deflection.
6.	"	"	45.0MC	"	"	A9	Adjust for maximum deflection. Repeat steps 1 thru 6. Disconnect signal generator and replace IF plug in its socket on tuner.
7.	Direct	High side to an ungrounded tube shield floating over converter tube (V3). Low side to chassis.	42.1MC	Any non-interfering channel	"	A10	Adjust for maximum deflection.
8.	"	"	45.75MC	"	"	A11	Adjust for maximum deflection. Remove VTVM and 3 volt bias battery.

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 5MFD, 50 volt capacitor to the ungrounded side of C53. Connect the positive lead to chassis.
Couple a second signal generator to an ungrounded tube shield floating over converter tube (V3) to provide markers on response curve. Connect the DC probe of VTVM to the ungrounded side of C44. Connect positive lead to chassis.
Adjust sweep generator output for approximately 4 volts on VTVM.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	63MC (10MC Swp)	39.75MC 41.25MC 42.25MC 45.0MC 45.75MC 47.25MC	3	Vert. Amp. thru 22KΩ to point (B). Low side to chassis.		Check for response curve similar to Fig. 1. The 47.25, 41.25 and 39.75MC markers should be at MINIMUM response. The 45.0 MC marker should not exceed 97% or smear may occur on high channels. If necessary, SLIGHTLY retouch A6 thru A-11 to obtain desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Remove the fourth video IF amplifier tube (V7) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to point (B) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (D). Common to point (C).	A12, A13 A14	Adjust for maximum deflection.
11.	"	"	"	"	DC probe to point (E). Common to chassis.	A15	"
12.	"	"	"	"	DC probe to point (F). Common to point (G).	A16	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Replace V7 in its socket.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Remove V7 from its socket.
Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to point (B). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (E). Low side to chassis.	A12, A13, A14, A15	Disconnect stabilizing capacitor C3B. Adjust for curve of maximum amplitude and symmetry similar to Fig. 2.
11.	"	"	"	"	"	Vert. Amp. to point (F). Low side to chassis.	A16	Reconnect stabilizing capacitor C3B. Adjust so that 4.5MC occurs at center of response curve as in Fig. 3. SLIGHTLY retouch A15 for maximum amplitude and straightness of crossover lines. Replace V7 in its socket. Continue alignment with step 13.

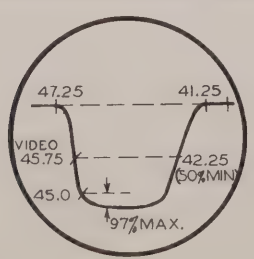

FIG. 1

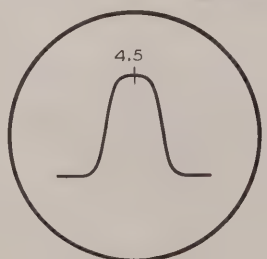

FIG. 2

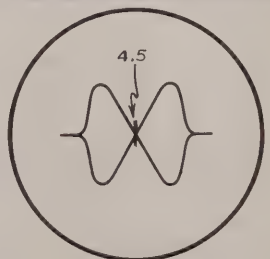

FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

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4.5MC TRAP ALIGNMENT

If a 4.5MC signal generator of crystal accuracy capable of at least one volt output is not available tune in a TV station and adjust A17 for MINIMUM 4.5MC beat interference in the picture.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.001MFD	High side to point (B). Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig.4) to pin 2 (grid) of picture tube. Low side to chassis.	A17	Remove 6AL5 (V8) from its socket. Set contrast control to maximum contrast position. Set generator for maximum output. Adjust A17 for MINIMUM deflection. Replace V8 in its socket.

OSCILLATOR ALIGNMENT (VHF/UHF TUNER 10535)

Replace 6AV6 (V12) in its socket and place converter tube shield to its normal position. Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of channels it may be possible to correct them in one step using A18. It should be noted that A18 is an all channel oscillator circuit adjustment and should not be used to correct any individual channel.

If adjustment of A18 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.

The channel adjustment screws are reached thru a hole (hole extends thru UHF tuner) just above and slightly to the left of the channel switch shaft.

The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A19	Adjust to place sound marker as shown in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A20	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A21	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A22	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A23	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A24	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A25	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A26	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A27	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A28	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A29	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A30	

RF AND MIXER ALIGNMENT (VHF/UHF TUNER 10535)

The RF, mixer and UHF portions of this receiver have been properly aligned at the factory and are very stable. Alignment of these portions should not be required in the field.

OSCILLATOR ALIGNMENT (VHF TUNER 10534)

The oscillator alignment of VHF tuner 10534 is identical to the oscillator alignment for VHF/UHF tuner 10535 with the following exception: The VHF tuner has no all channel oscillator adjustment. See step 14 for the individual oscillator channel strip adjustments.

RF AND MIXER ALIGNMENT (VHF TUNER 10534)

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

AM TUNER ALIGNMENT (MODELS 3042 AND 3142)

Set the function switch to "radio" position.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
15.	.01MFD	High side to pin 7 (grid) of 6BE6 (AM converter tube). Low side to chassis.	455KC (400∿Mod)	AM	Tuning gang fully open	Across voice coil	A31 A32 A33 A34	Adjust for maximum deflection.
16.		Loop	1620KC	"	"	"	A35	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
17.		"	1500KC	"	"	"	A36	"
18.		"	600KC	"	Tune to 600KC signal	"		Adjust for maximum deflection by moving sleeve on loop stick(on some models a segment of coil is moveable). It may be necessa ry to repeat steps 17 and 18 several times to obtain perfect tracking.

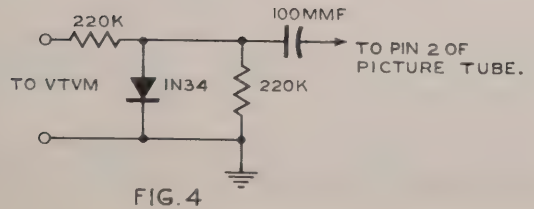


FIG.4

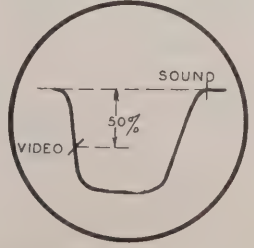
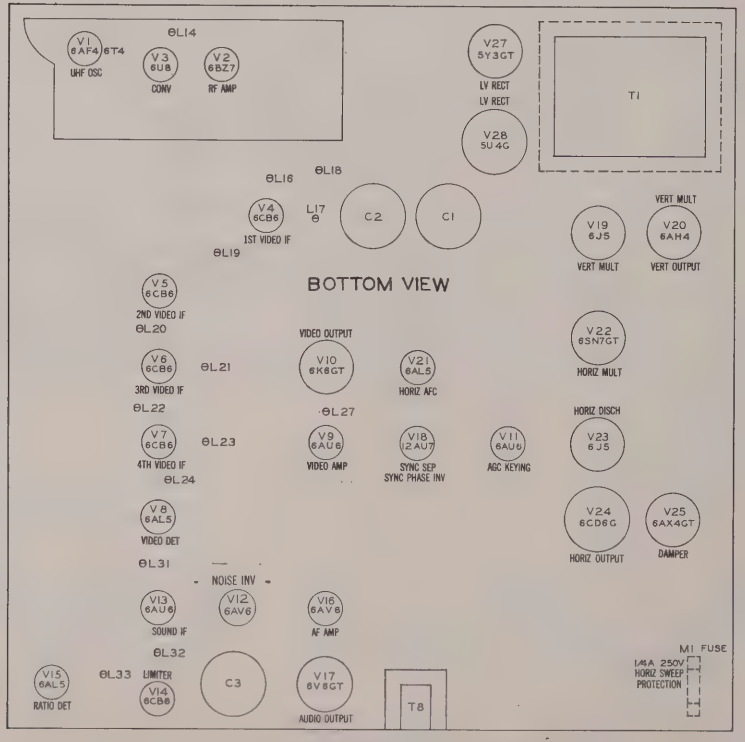


FIG.5

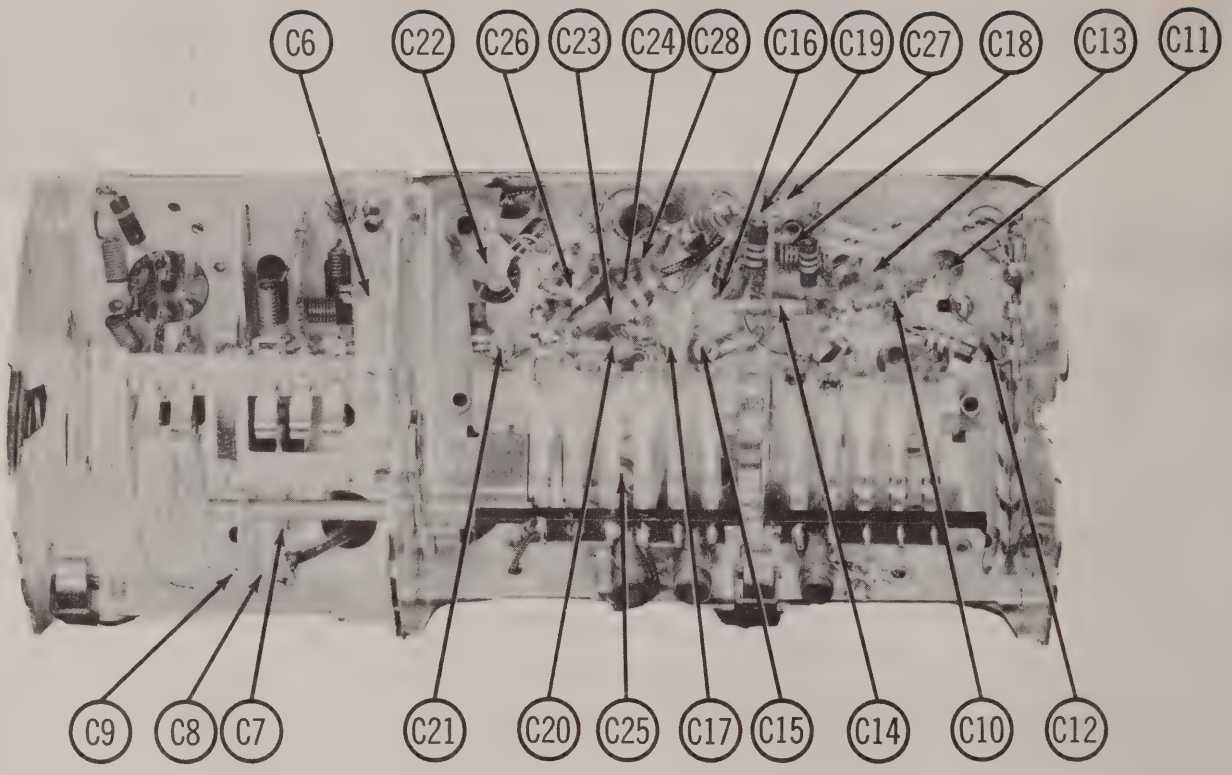
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	■†3.3KΩ	10KΩ	.1Ω	0Ω	0Ω	10KΩ	■†3.3KΩ		
V 2	6BZ7	▲5.4KΩ	▲140KΩ	INF	0Ω	.1Ω	INF	150KΩ	0Ω	
V 3	6U8	†3.3KΩ	200KΩ	▲110KΩ	.1Ω	0Ω	▲13KΩ	0Ω	0Ω	10KΩ
V 4	6CB6	100KΩ	68Ω	0Ω	.1Ω	†300Ω	†300Ω	0Ω		
V 5	6CB6	100KΩ	100Ω	0Ω	.1Ω	†200Ω	†200Ω	0Ω		
V 6	6CB6	100KΩ	68Ω	.1Ω	0Ω	†100Ω	†100Ω	0Ω		
V 7	6CB6	.1Ω	180Ω	.1Ω	0Ω	†.1Ω	†0Ω	0Ω		
V 8	6AL5	100Ω	INF	0Ω	.1Ω	100KΩ	0Ω	2.8KΩ		
V 9	6AU6	2.8KΩ	0Ω	.1Ω	0Ω	†3.9KΩ	†0Ω	147Ω		
V 10	6K6GT	0Ω	0Ω	▲3.9KΩ	†0Ω	470KΩ	470KΩ	.1Ω	500Ω	
V 11	6AU6	†82KΩ	†0Ω	†0Ω	†.1Ω	200KΩ	▲40Ω	†0Ω		
V 12	6AV6	150KΩ	2.8KΩ	.1Ω	0Ω	INF	INF	†100KΩ		
V 13	6AU6	†1Ω	†0Ω	†0Ω	†.1Ω	▲6.8KΩ	▲6.8KΩ	†120Ω		
V 14	6CB6	†23KΩ	†1.1KΩ	†0Ω	†.1Ω	▲33KΩ	▲33KΩ	†1KΩ		
V 15	6AL5	20KΩ	0Ω	0Ω	.1Ω	INF	0Ω	INF		
V 16	6AV6	4.7Meg	0Ω	0Ω	.1Ω	INF	INF	▲470KΩ		
V 17	6K6GT	0Ω	†.1Ω	▲900Ω	▲500Ω	▲200KΩ	150KΩ	†0Ω	100KΩ	
V 18	12AU7	†1.5Meg	4.7Meg	0Ω	0Ω	0Ω	†6.6KΩ	†1.5Meg	2.2KΩ	.1Ω
V 19	6J5	0Ω	0Ω	▲3.8Meg	120KΩ	470KΩ	▲150KΩ	.1Ω	140KΩ	
V 20	6AH4GT	2.2Meg	.1Ω	▲2.8Meg	INF	▲430Ω	INF	0Ω	1.6KΩ	
V 21	6AL5	14Ω	14Ω	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 22	6SN7GT	12KΩ	▲100KΩ	1.5KΩ	5.2Meg	▲5.7KΩ	1.5KΩ	.1Ω	0Ω	
V 23	6J5GT	0Ω	.1Ω	▲180KΩ	▲12.5Ω	220KΩ	INF	0Ω	0Ω	
V 24	6CD6G	60KΩ	0Ω	500Ω	INF	470KΩ	82KΩ	.1Ω	▲10KΩ	TOP CAP ▲8Ω
V 25	6AX4GT	INF	INF	INF	INF	▲55Ω	INF	0Ω	.1Ω	
V 26	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲360Ω
V 27	5Y3GT	INF	100KΩ	INF	16Ω	INF	17Ω	INF	100KΩ	
V 28	5U4G	INF	100KΩ	INF	16Ω	INF	17Ω	INF	100KΩ	
V 29	24CP4	0Ω	1Meg	PIN 10 ▲2Meg	PIN 11 †150KΩ	PIN 12 .1Ω				

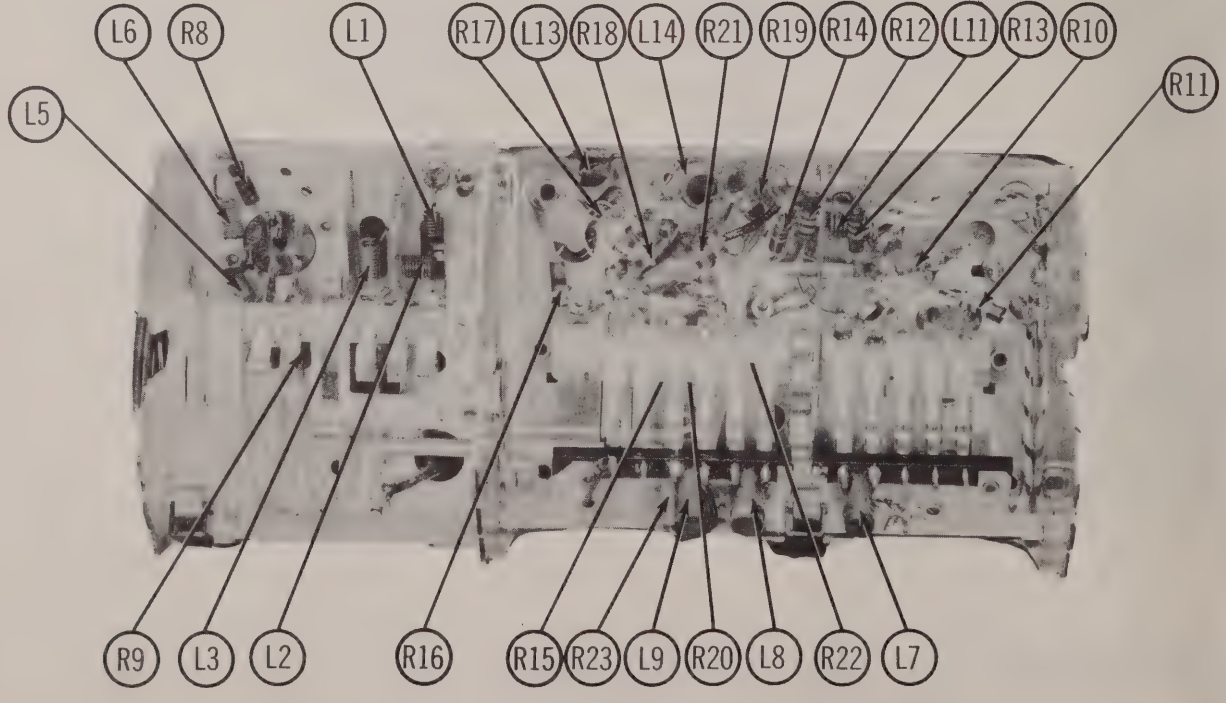
■ MEASURED IN UHF POSITION
† MEASURED FROM 110V LINE
▲ MEASURED FROM PIN 8 OF V27
▲ MEASURED FROM PIN 3 OF V25



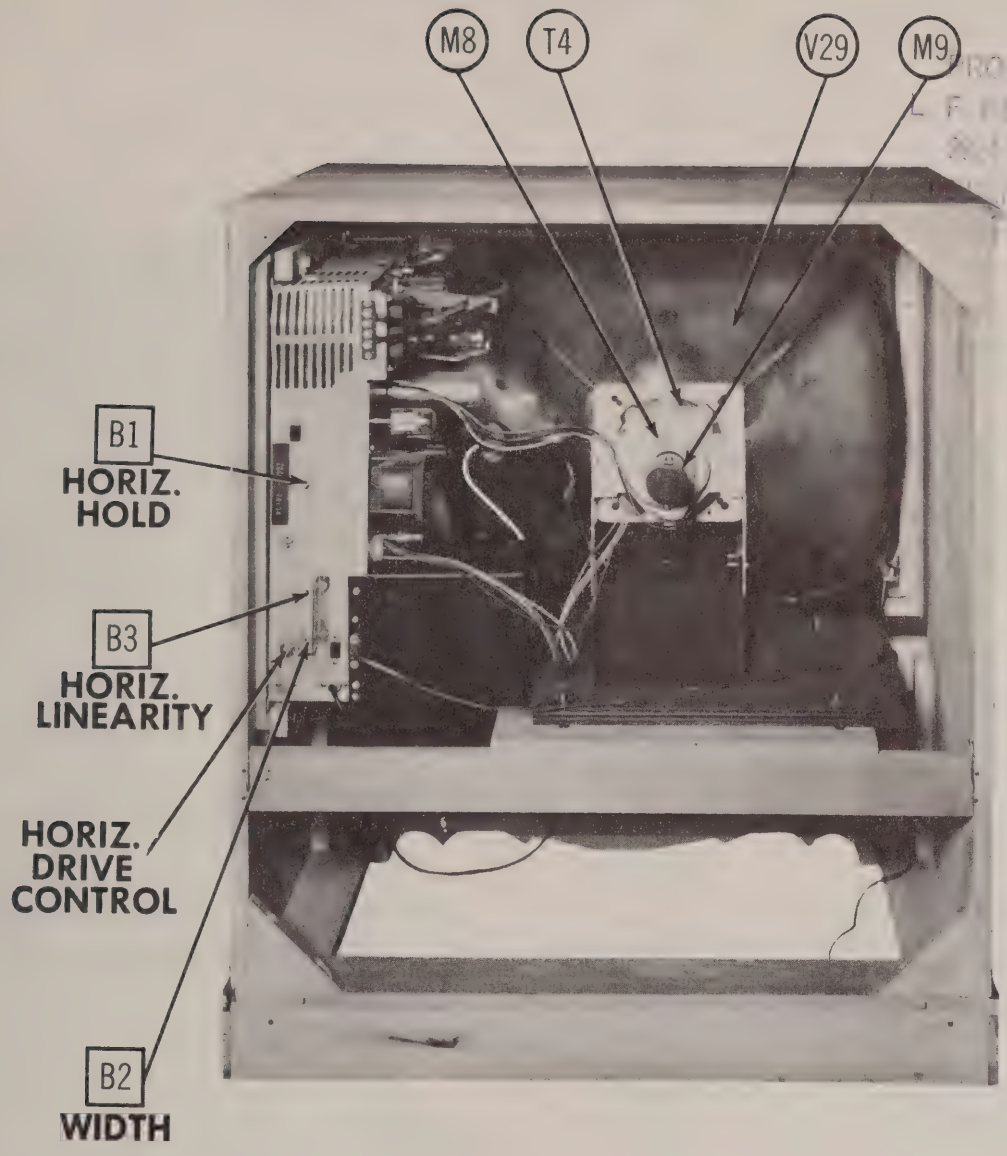
TUBE PLACEMENT CHART



RF TUNER BOTTOM VIEW-CAPACITOR IDENTIFICATION



RF TUNER BOTTOM VIEW-RESISTOR IDENTIFICATION



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal oscillator slug, B1, (Labeled"Horiz. hold" on rear panel) until the picture synchronizes horizontally. The correct setting of B1 is approximately half way between the points where the picture tears.

Adjust the horizontal drive control in a clockwise direction as far as possible without the presence of vertical white lines or compression near the center of the picture.

Adjust the width slug (B2) for a picture slightly wider than necessary to fill the picture mask horizontally.

Adjust the linearity slug (B3) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V23, V24, V25, V27 and V28. Check adjustment of the horizontal drive control, B2 and B3. Check waveform W18.

If Satisfactory	If Unsatisfactory
Check C91, C92, C93, C95, C94, C3A, R108, T2, T4A, T5, T6 and other associated components.	Check R101, R103, R105, R106, C85, C88, C101 and other associated components.

DRIVE LINES

Check adjustment of the horizontal drive control. Check by substitution V23, V24 and V25. Check T2, T4A, C88, C92, C93, C101, R104, R105, R106 and other associated circuit components.

COMPRESSED LEFT SIDE

Check by substitution V23, V24 and V25. Check adjustment of the horizontal drive control, B2 and B3. Check components associated with the horizontal output and damper stages especially T2 and T4A.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check C83 for open. Check V24 and V25.

XMAS TREE EFFECT

Substitute V22. Check C84, C85, C86, C87, L34 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V19 and V20. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R87, R3 and other associated components.	Check R85, R86, R72, R74 and other associated components.

INSUFFICIENT SWEEP

Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V19 and V20. Check T3, T4B, C1C and other associated components.

COMPRESSED AT TOP

Check by substitution V19 and V20. Check C74, R86 and other associated components,

FOLDS

Check by substitution V19 and V20. Check associated components for failure or change of value.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V12 and V18. Check associated components for failure or change of value especially C67, C68, R76 and R75.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Check by substitution V12, V18 and V19. Check waveform W9.

If Unsatisfactory	If Satisfactory
Check vertical integrator and other associated components. Check video and video If stages for overloading.	Check components associated with V19.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V21 and V22. Check associated components, including, R94, R95, R99, R102, C86 and C87 for failure or change of value.

HORIZONTAL BENDING

Check by substitution V21, V22, V23 and V24. Check C82, C83, R96, and R97 for failure or change of value.

VIDEO

LOSS OF VIDEO

Check by substitution V8, V9 and V10. Check peaking coils, plate load resistors, coupling capacitors and other components associated with these stages. Check picture tube.

SOUND BARS

Adjust tuner fine tuning for best picture and sound. Check adjustment A17. Check video IF alignment.

POOR CONTRAST

Check by substitution V8, V9 and V10. Check contrast control, picture tube and other associated components.

NEGATIVE PICTURE

Check by substitution V8, V9, V10, V11, V12, V4, V5, V6 and V2. Check AGC network components. Check picture tube and other associated circuit components.

SMEAR

Check by substitution V2, V4, V5, V6, V7, V8, V9 and V10. Check L25, L28, R41, R42, R43, R44, R45, C49, C50, picture tube and other associated components for failure or change of value. Check components associated with the video IF strip.

WIDE BLACK BAR ACROSS PICTURE

Check V2, V4, V5, V6, V7, V8, V9 and V10 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V13, V14, V15, V16 and V17. Check stages V16 and V17 using audio signal generator. Apply audio signal across R66.

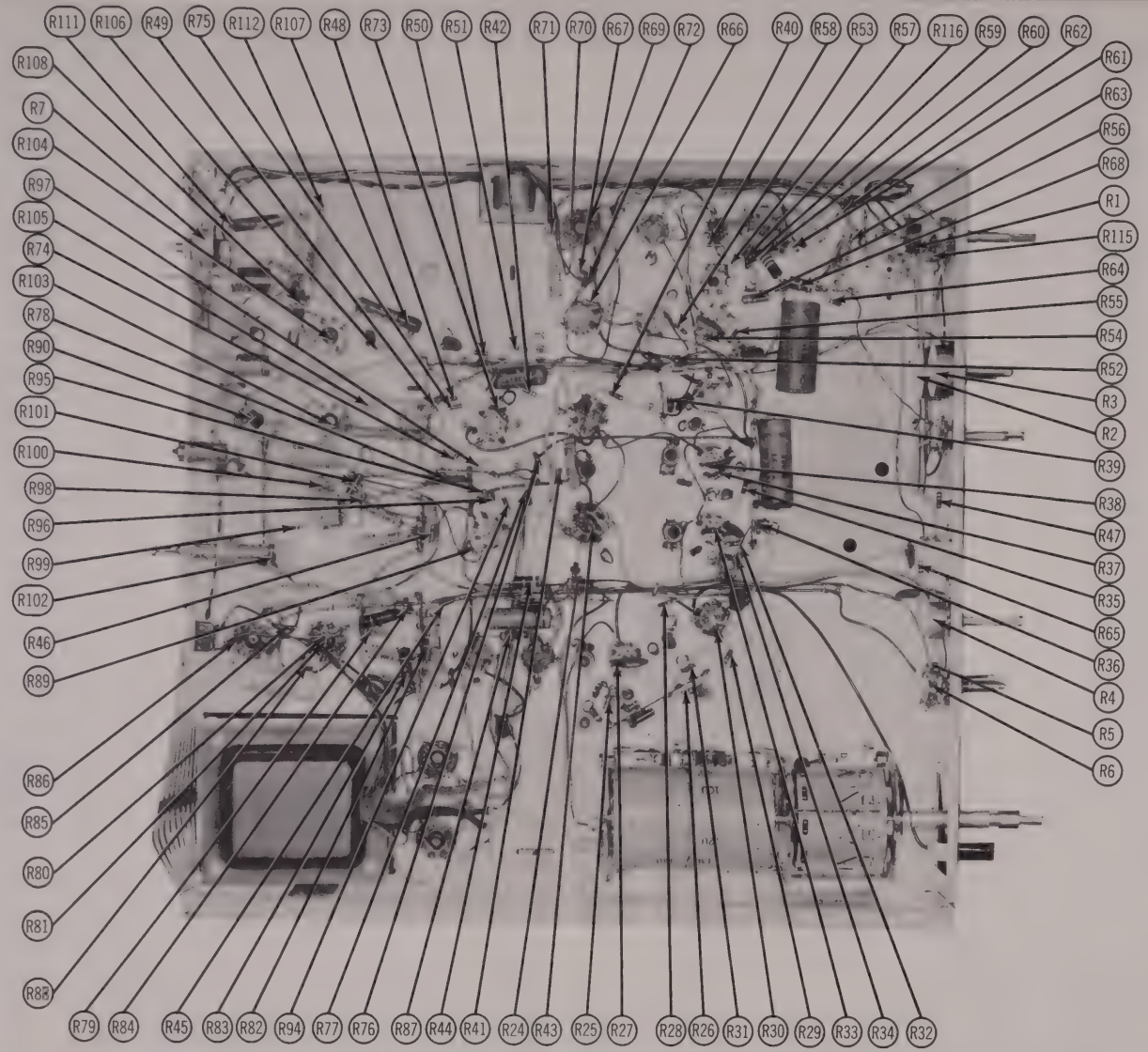
If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V16 and V17 especially T8 and C65.

BUZZ

Adjust tuner fine tuning for best picture and sound. Adjust A16 for minimum buzz. If still unsatisfactory substitute V15 and realign ratio detector and audio IF stages. Check C59 and C3B.

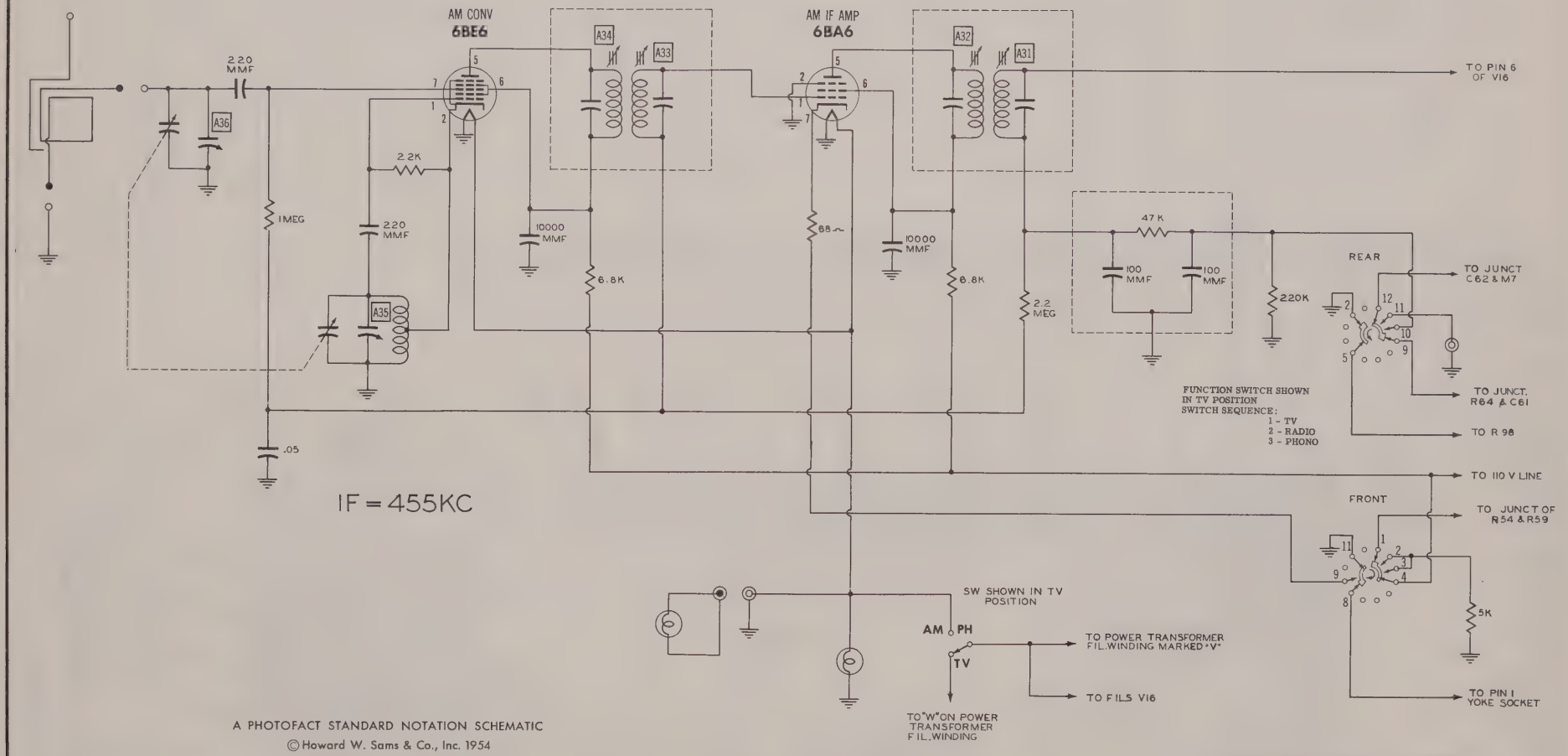
DISTORTED

Follow procedure outlined under " Weak or No Sound".



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PRO... ST...
L... F... SHIP
39... MEADE ST.
DENVER, COLORADO



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PACKARD-BELL MODELS 2841, 2942, 3042, 3142 (Ch. 2840, 3040-1)

RADIO SCHEMATIC

PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

PROPERTY OF
L. F. LANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Packard Bell PART No.	STANDARD REPLACEMENT		
V1A	UHF Oscillator	6AF4	6AF4	7DK	
B	UHF Oscillator	6T4	6T4	7DK	
V2	RF Amplifier	6BZ7	6BZ7	9AJ	
V3	Converter	6U8	6U8	9AE	
V4	1st Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd Video IF Amp.	6CB6	6CB6	7CM	
V7	4th Video IF Amp.	6CB6	6CB6	7CM	
V8	Video Detector	6AL5	6AL5	6BT	
V9	Video Amplifier	6AU6	6AU6	7BK	
V10	Video Output	6K6GT	6K6GT	7S	
V11	AGC Keying	6AU6	6AU6	7BK	
V12	Noise Inverter	6AV6	6AV6	7BT	
V13	1st Sound IF Amp.	6AU6	6AU6	7BK	
V14	Limiter	6CB6	6CB6	7CM	
V15	Ratio Detector	6AL5	6AL5	6BT	
V16	AF Amplifier	6AV6	6AV6	7BT	
V17	Audio Output	6V6GT	6V6GT	7S	
V18	Sync Separator-Sync Phase Inverter	12AU7	12AU7	9A	
V19A	Vert. Mult.	6J5	6J5	6Q	
B	Vert. Mult.	6J5GT	6J5GT	6Q	
V20	Vert. Mult. - Vert. Output	6AH4	6AH4	8EL	
V21	Horiz. AFC	6AL5	6AL5	6BT	
V22	Horiz. Mult	6SN7GT	6SN7GT	8BD	
V23A	Horiz. Discharge	6J5	6J5	6Q	
B	Horiz. Discharge	6J5GT	6J5GT	6Q	
V24	Horiz. Output	6CD6G	6CD6G	5BT	
V25	Damper	6AX4GT	6AX4GT	4CG	
V26	HV Rectifier	1B3GT	1B3GT	3C	
V27	LV Rectifier	5Y3GT	5Y3GT	5T	
V28	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	Packard Bell PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V29A	24CP4A	24CP4A	24CP4A	24CP4A 24CP4 24XP4 ①		12N 12N 12D 12N 12N	① Circuit changes necessary
B	24TP4	24TP4					
C	27RP4	27RP4	27RP4				

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450	24055	AFH3-159		C118		FP375	TVL-3764	
B	■40	450								
C	▲100	200								
C2A	▲40	450	24055	AFH3-159		C118		FP375	TVL-3764	
B	■40	450								
C	▲100	200								
C3A	▲5	75	24069	AFH4-101				FP424.1	R1316	
B	■5	75								
C	▲25	25								
D	100	15								
C4	40	350	24063	PRS450/40		BR4045		TC78	TVA-1611	Note 1
C5	50	50								
C6A	1									
B	2									
C7	10									
C8	800			EF-001	MFT-1000				503C-D1	
C9	800			EF-001	MFT-1000				503C-D1	
C10	.5-3				829-3		311S-01-0R5	CT565A		
C11	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0K-6R8	ZT-5568	5TCCB-V6.8	
C12	1500			BPD-0015	DD-152	K071	801-0015	D6-5215	5HK-D15	
C13	3			SI3NP0	TCZ-3	Z007	NP0K-030		5TCCB-V3	
C14	800			EF-001	MFT-1000	Z007			503C-D1	
C15	.5-3				829- 3		311S-01-0R5	CT565A		
C16	1.5			SI1.5NP0	TCZ-1.5	Z004	NP0K-1R5	ZT-5515	5TCCB-V15	
C17	47			BPD-00047	D6-470	G033	GP1K-470	UC-5447	5GA-Q47	
C18	800			EF-001	MFT-1000				503C-D1	
C19	800			EF-001	MFT-1000				503C-D1	
C20	47									
C21	.5-3				829-3		311S-01-0R5	CT565A		
C22	220			BPD-00022	D6-221	G051	GP2K-221	UC-5322	5GA-T22	
C23	10			SI10N750	TCN-10	N018	N750K-100	NT-541	5TCU-Q1	
C24	5									
C25	.5-3				829-3		311-01-0R5	CT565A		
C26	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C27	800			EF-001	MFT-1000				503C-D1	
C28	68			SI68N750	TCN-68	N038			5TCU-Q68	
C29	470		23916	SI470	D6-471	K060	GP1K-471	UC-5347	5GA-T47	
C30A	1500		23954	BPD-2X0015	DD3-152	DK-071	812-0015	DCD-5215	5HK-2D15	
B	1500									
C31	2.2		23969	SI2.2NP0	TCZ-2.2	TZ05	NP0A-2R2		5TCCB-V22	
C32	22	500				5W5Q22				
C33	4.7		23978	SI4.7NP0	TCZ-4.7	TZ07	NP0A-4R7	ZT-5547	5TCCB-V47	
C34	30	500				5W5Q3				
C35A	10000		23962	BPD-2X01	DD3-103	DK-082	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		
C36	5000		23931	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C37	30	500				5W5Q3				
C38	4.7		23978	SI4.7NP0	TCZ-4.7	TZ07	NP0A-4R7	ZT-5547	5TCCB-V47	

(CONT'D ON NEXT PAGE)

L. F. BLANKENSHIP
3925 MEADE ST.
DENVER, COLORADO

PARTS LIST & DESCRIPTION (continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C39	30	500				5W5Q3				
C40A	2000		23954	BPD-2X0015	DD3-152	DA-071	612-0015	DCD-5215	5HK-3D15	
B	1500									
C41	4.7		23978	834-THP0	TCR-4.7	T207	NP0A-4R7	ET-5647	5TCCB-V47	
C42	33	500				5W5Q33				
C43A	1500		23954	BPD-2X0015	DD3-152	DK-071	612-0015	DCD-5215	5HK-3D15	
B	1500									
C44	1.0	100	23040	P484-1		CUB3W1		PT41	2TM-M1	
C45	5		23908	SIS-NT50	TCN-5	N5U	N750A-050	NT-505	5TCUB-V5	
C46	5000		23931	BPD-005	DD-502	K080	80L-005	DC-525	5HK-D5	
C47	30		23927	SIDNP0	TCE-10	T209	NP0A-100	ET-541	5TCC-Q1	
C48	5000		23931	BPD-005	DD-502	K080	80L-005	DC-525	5HK-D5	
C49	.05	200	23017	P388-05	DF-503	P7325		PT415	2TM-S5	
C50	.1	600	23012	P686-1	DF-104	CUB6P1		PT601	6TM-P1	
C51	.1	200	23019	P388-1	DF-104	P72P1		PT41	2TM-P1	
C52	470	1000	23967	HYD15-470		VT47	SR5KY-331-471		10GA-T47	
C53	5000		23931	BPD-005	DD-502	K080	80L-005	DC-525	5HK-D5	
C54	2.2		23908	SIS-2N0P0	TCS-2.2	T205	NP0A-2R2		5TCCB-V22	
C55	75			SIT5NT50	TCN-75	TN19	NT50B-750	ET-5478	5TCU-Q75	
C56A	10000		23962	BPD-010	DD3-103	DK-082	§11-01	DC-511	5HK-3S1	
B	10000						§11-01	DC-511		
C57A	10000		23962	BPD-2X01	DD3-103	DK-082	§11-01	DC-511	5HK-3S1	
B	10000						§11-01	DC-511		
C58	100		2339?0	†PA-96-3	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C59	10000		23959	BPD-01	DD-103	K082	81L-01	DC-511	5HK-S1	
C60	470		23918	BPD-00047	D6-471	K060	GP1K-471	UC-5347	5GA-T47	
C61	500	600	23908	P688-005	D6-502	CUB6D3	GP2-353-502	PT623	6TM-D3	
C62	.02	600	23907	P688-02		CUB683		PT613	6TM-S3	
C63	10000		23959	BPD-01	DD-103	K062	81L-01	DC-511	5HK-S1	
C64	10000		23959	BPD-01	DD-103	K083	81L-01	DC-511	5HK-S1	
C65	.02	600	23907	P688-02		CUB683		PT613	6TM-S3	
C66	.05	600	23906	P688-01	DD-103	CUB631	81L-01	PT611	6TM-S1	Note 3
C67	.1	200	23019	P388-1	DF-104	P72P1		PT401	2TM-P1	
C68	1500		23936	SIL500	D6-152	T?54	GP2K-152	DC-5215	5HK-D15	
C69A	3000							PT623		
B	3000		‡23951	♦PA-110	♦PC-100	♦U57M1	♦4405-01	PT625	♦101C1	
C	3000							PT623		
C70	.002	500	23902	P688-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	
C71	.001	500		P688-001	D6-102	CUB6D1	GP2-333-102	PT621	6TM-D1	
C72	.002	500								
C73	.5	200	23935	P288-5		P32P5		PT405	2TM-P5	
C74	.01	500	23022	P688-1	DF-104	CUB69P1		PT601	6TM-P1	
C75	.01	600	23006	P688-01	D6-103	CUB631	GP3-333-103	PT611	6TM-S1	
C76	.001	600	23001	P688-001	D6-102	CUB6D1	GP2K-102	PT621	6TM-D1	
C77	2200	500	23219	1467-0015		IR5D13		MCB466		
C78	5500	500	23006	P688-01	D6-103	CUB631	GP3-333-103	PT611	6TM-S1	
C79	.1	600	23012	P688-1	DF-104	CUB64P1		PT601	6TM-P1	
C80	1500		23936	SIL500	D6-152	T?54	GP2L-153	UC-5315	5GA-D15	
C81	1500		23936	SIL500	D6-152	T?54	GP2L-152	UC-5215	5GA-D15	
C82	5000		‡23900	♦PA-199	DD-502	K080	80L-005	DC-525	5HK-D5	
C83	.05	200	23017	P388-05	DF-503	P7325		PT415	2TM-S5	
C84	.005	600	23008	P688-005	D6-203	CUB6D2	GP2L-302	PT623	6TM-D3	
C85	5000		23931	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C86	220	500								
C87	4600	500	23308	1467-004		IR5D4		MCB463	MS-34	
C88	270		23943	BPD-00027	D6-271	G054	GP1K-271	UC-5327	5GA-T27	
C89	10000		23939	BPD-01	DD-103	K063	81L-01	DC-511	5HK-S1	
C90	.05	600	23010	P688-05	DF-503	CUB685		PT615	6TM-S5	
C91	.1	600	23012	P688-1	DF-104	CUB64P1		PT601	6TM-P1	
C92	.05	600	23010	P688-05	DF-503	CUB685		PT615	6TM-S5	
C93	.05	600	23010	P688-05	DF-503	CUB685		PT615	6TM-S5	
C94	200	5000								
C95	.2	600		P688-2		CUB6P2		PT602	6TM-P2	
C96	1500	30000	23959	HV30C	TV5-502	MMV-20T5	413	HV20035B	20DK-T5	
C97	120	2000		HVD30-00012	D30-121				20GA-T12	Note 2
C98	.05	125 VAC								
C99	.05	250 VAC								
C100	.02	600	23907	P688-02		CUB683		PT613	6TM-S3	Note 1
C101	5000		23931	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	

Note 1. Used only on Ch. 3040-1.
Note 2. Ch. 3040-1 uses a 47MMF ⓖ 2000V in this application (part #23956).
Note 3. Ch. 3040-1 uses a .005MFD ⓖ 600V in this application (part #23004).
† C58 and R57 are combined in one unit.
† C92 and R97 are combined in one unit.
♦ Items C69A, C69B, C69C, R78A, R78B and R78C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Packard-Bell PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5000Ω		35850A	* QJ-462		SBBT-745-S	UF53R	Contrast-Panel
B	500KΩ	1	Not Req.				UR55T154	Volume tapped at 100KΩ-Rear
C	Switch		Not Req.				US-26	Attach to R1A
R2A	1000Ω	2	W-100	A43-100	V-121		HI00L	Automatic Noise Inv. Wire Wound
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	DS-36	Attach to R2A
R3A	1000Ω	2	25851	WK-1000	A43-1000	V-129	HI000L	Vert. Linearity-Wire wound
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	DS-36	Attach to R3A
R4A	500KΩ	½	35515	QU-133	A47-500K-S	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R4A
R5A	5 Meg	½	35852	QU-141	A47-5Meg-S	AB-57	U-67	Height
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R5A
R6A	500KΩ	½	35848	♦ QJ-461		UF556	BSB-738	Brightness-Panel
B	150KΩ	½	Not Req.				UR354L	Vert. Hold -Rear
R7A	150KΩ	½	35839C	QU-132	A47-150K-S	AB-46	U-43	Horiz. Drive
B	Shaft		Not Req.	Not Req.	KSS-1/4	AK-1	Not Req.	Attach to R7A

* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B11-114 & P1-112 (Panel)
B12-133X & R2-204 (Rear) & SWITCH 76-1.
♦ CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B11-133 & P9-104 (Panel)
B11-129 & R11-112 (Rear)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Packard-Bell PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R8	10K	½		BTS 10K	
R9	1000Ω	½		BTS-1000	
R10	22KΩ	½		BTS 22K	
R11	47KΩ	½		BTS 47K	
R12	270KΩ	½		BTS-270K	
R13	180KΩ	½		BTS 180K	
R14	6800Ω	½		BTS-6800	
R15	15MΩ	½		BTS-15M	
R16	100KΩ	½		BTS-100K	
R17	100KΩ	½		BTS 100K	
R18	100KΩ	½		BTS-100K	
R19	6800Ω	½		BTS-6800	
R20	10KΩ	½		BTS-10K	
R21	3300Ω	½		BTA-3300	
R22	33KΩ	½		BTS-33K	
R23	4700Ω	½		BTS-4700	
R24	4700Ω	½		BTB-4700	
R25	1800Ω	½		BTS-1800	
R26	1.2Ω	½		BTS-120	
R27	6Ω	½		BTS-68	
R28	100Ω	½		BTS-100	
R29	12KΩ	½		BTS-12K	
R30	100Ω	½		BTS100	
R31	130Ω	½		BTS-130	
R32	3300Ω	½		BTS-3300	
R33	6Ω	½		BTS-68	
R34	100Ω	½		BTS-100	
R35	100Ω	½		BTS-100	
R36	120Ω	½		BTS-120	
R37	3300Ω	½		BTS-3300	
R38	180Ω	½		BTS-180	
R39	2700Ω	½		BTS-2700	
R40	47Ω	½		BTS-47	
R41	3900Ω	½		BTS-3900	
R42	22KΩ	½		BTS-22K	
R43	470KΩ	½		BTS-470K	
R44	3900Ω	2		BTB-3900	
R45	1 Meg	½		BTS-1 Meg	
R46	1 Meg	½		BTS-1 Meg	
R47	33KΩ	½		BTS-33K	
R48	47KΩ	½		BTS-47K	
R49	100KΩ	½		BTS-100K	
R50	3300Ω	½		BTS-3300	
R51	100KΩ	½		BTS-100K	
R52	47KΩ	½		BTS-47K	
R53	100KΩ	½		BTS-100K	
R54	10KΩ	½		BTS-10K	
R55	120Ω	½		BTA-120	
R56	6800Ω	1		BTA-6800	
R57	22KΩ	½	†23970	BTS-22K	
R58	120Ω	½		BTS-120	
R59	1000Ω	½		BTS-1000	
R60	33KΩ	2		BTB-33K	
R61	470Ω	½		BTS-470	Note 3
R62	10KΩ	½		BTS-10K	
R63	10KΩ	½		BTS-10K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Packard-Bell PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R64	22KΩ	½		BTS 22K	
R65	33KΩ	½		BTS-33K	
R66	4.7Meg	½		BTS-4.7Meg	
R67	470KΩ	½		BTS-470K	
R68	470Ω	2		BTB-470	
R69	150KΩ	5%		BTS-150K 5%	
R70	270KΩ	5%		BTS-270K 5%	
R71	100KΩ	½		BTS-100K	
R72	1.5Meg	½		BTS-1.5Meg	Note 1
R73	4.7Meg	½		BTS-4.7Meg	
R74	2200Ω	½		BTS-2200	
R75	1.5Meg	½		BTS-1.5Meg	
R76	3300Ω	½		BTS-3300	
R77	3300Ω	½		BTS-3300	
R78A	22KΩ	½		BTS-22K	
B	8200Ω	½	‡23951	BTS-8200	
C	8200Ω	½		BTS-8200	
R79	68KΩ	½		BTS-68K	
R80	470KΩ	½		BTS-470K	
R81	22KΩ	½		BTS-22K	
R82	150KΩ	½		BTS-150K	
R83	100KΩ	½		BTS-100K	
R84	18KΩ	½		BTS-18K	
R85	1 Meg	½		BTS-1 Meg	
R86	2.2Meg	½		BTS-2.2Meg	
R87	470Ω	1		BTA-470	
R88	150KΩ	½		BTS-150K	
R89	100Ω	½		BTS-100	
R90	5.6Ω	1			
R91	560Ω	½		BTS-560	
R92	560Ω	½		BTS-560	
R93	1000Ω	½		BTS-1000	
R94	100KΩ	½		BTS-100K	
R95	100KΩ	½		BTS-100K	
R96	4.7Meg	½		BTS-4.7Meg	
R97	470KΩ	½	♦ 23980	BTS-470K	
R98	150KΩ	½		BTS-1500	
R99	560Ω	½		BTS-5600	
R100	12KΩ	½		BTS-12K	
R101	100KΩ	1		BTA-100K	
R102	100KΩ	½		BTS-100K	
R103	220KΩ	½		BTS-220K	
R104	22KΩ	½		BTS-22K	
R105	180KΩ	½		BTS-180K	
R106	470KΩ	½		BTS-470K	
R107	400Ω	10		3 3/4A-400	
R108	10KΩ	2		BTB-10K	
R109	1 Meg	1		BTA-1 Meg	
R110	1 Meg	1		BTA-1 Meg	
R111	100KΩ	½		BTS-100K	
R112	1 Meg	½		BTS-1 Meg	Note 2
R113	22Ω	½		BTS-220	Note 2
R114	500Ω	5			
R115	470Ω	½		BTS-470	
R116	22KΩ	½		BTS-22K	Note 4

† Items R57, C58 are combined in one unit.
† Items C92, R97 are combined in one unit.
♦ Items R78A, R78B, R78C, C69A, C69B, C69C are combined in one unit.
Note 1. Used in Ch. 2840 only.
Note 2. Used in Ch. 3040-1 only.
Note 3. Some models may use a 82Ω resistor in this application.
Note 4. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING PRI	RATING SEC. 1	RATING SEC. 2	Packard Bell PART No	Stancor PART No.	Merit PART No.	Triad PART No	RCA TYPE No	Halldorson PART No.	Thordarson PART No
T1	117VAC	644VCT	5VAC	89047	P-8168①②	P-3053②③④⑤	R-52BC		P9737①.②	26R00①④
	ⓖ 2.2A	.390ADC	ⓖ 6A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC	6.3VAC								
	ⓖ 1.3A	ⓖ 10.6A								

① Drill new mounting holes.
② Parallel and phase 6.3 V windings for Sec. #4.
③ Parallel and phase 5V windings for Sec. #2.
④ Use low voltage taps for Sec. #1.
⑤ Use 6.3V ⓖ 2.7A for damper tube.
⑥ Parallel and phase 4 - 6.3V ⓖ 3A winding for Sec. #4.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	Packard Bell PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T2	Horiz. Output Trans.	89442B			D-50 *	235T1 *		FLY-16 *
T3	Vert. Output Trans.	89443	A-8144 ①	A-3038①	A-99X ①		Z1802 ①	T-28553①
T4A	Yoke-Horiz. (12MH)	29567		MDF-902	Y-50-1	219D1 ②		
B	Yoke-Vert (41MH)							
T5	Horiz. Linearity (1.6-8.5MH)	29569	WC-8	MWC-8③	WC-12 ④	215R1		
T6	Width (4-23MH)	29568	WC-8③⑤	MWC-1③	WC-11③⑤	215R1	RF800③④	
T7	Horiz. AFC Trans.	89444		⑤				

① Connect as auto transformer.
② Use original yoke network.
③ Enlarge mounting hole.
④ Connect to coded blue and green terminals.
⑤ Connect to coded red and blue terminals.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Halldorson Replacement Connections	Thordarson Replacement Connections
	9		9	9			9
	7		7	7			7
	5		5	5			5
	T		T	T			T
	3		3	3			3
	1		1	1			1
Connect Width Coil Across	3 & 1		3 & 1	3 & 1			3 & 1

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Packard Bell PART No	Stancor PART No	Merit PART No	Triad PART No	Halldorson PART No	Thordarson PART No	NOTES
T8	4.5KΩ	3.3Ω	89436	A-3877	A-2930	S-3X	Z1107	TS-24851	

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Packard Bell PART No.	REPLACEMENT DATA VIKING PART No	REPLACEMENT DATA QUAM PART No	NOTES
SP1	10"	PM	3.3Ω	83705B	10J11	10A81	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Packard-Bell PART No	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Ant. Coil	0Ω						
L2	UHF Ant. Coil	0Ω						
L3	UHF Ant. Coil	0Ω						
L4	UHF Ant. RF, & Osc. Coils	0Ω						
L5A	Fil. Choke	0Ω						
B	Fil. Choke	0Ω						
L6	Cathode Choke	0Ω						
L7	UHF IF Input Coil	0Ω	.3Ω					
L8	UHF IF Interstage Coil	.3Ω	0Ω					
L9	UHF IF Interstage Coil	.3Ω						
L10	VHF Ant. Coils	0ΩCT	0Ω					
L11	Neutr. Coil	0Ω						
L12	VHF RF Mixer Grid & Osc. Coils	0Ω						
L13	Fil. Choke	0Ω						
L14	Conv. Plate	.1Ω						
L15	RF Choke	1.8Ω		29566	19-1065		4612	10 Microhenries
L16	1st Video IF	.1Ω		29559	20-1045 ■		6219■	
L17	47.25MC Trap	0ΩCT		29564	20-1047		6219 *	
L18	39.75MC Trap	0Ω		29565	20-1046			
L19	2nd Video IF	.1Ω	.1Ω	29568A	17-4533		6219	
L20	3rd Video IF	.1Ω	.1Ω	29570A				Includes trap
L21	39.75MC Trap	0Ω		29565	20-1046			
L22	4th Video IF	.1Ω	.1Ω	29568A	17-4533		6219	
L23	47.25MC Trap	0ΩCT		29564	20-1047		6219 *	
L24	5th Video IF	.1Ω	.1Ω	29572A	17-4533		6219	
L25	Series Peak. Coil	7Ω		29552	19-3093 †	TV-181 †	6177 †	93 Microhenries; wound on 3.9KΩ resistor
L26	Shunt Peak. Coil	12Ω		29509	19-3250	TV-185	6181	250 Microhenries
L27	4.5MC Trap	4Ω		29548	20-1005 ▲	TV-151	1470	
L28	Series Peak. Coil	8Ω		29506	19-3135 ■	TV-182	6178	120 Microhenries; wound on 22KΩ resistor
L29	Series Peak. Coil	3.9Ω		29520	19-3036	TV-180	6176	36 Microhenries
L30	Shunt Peak. Coil	7Ω		29507	19-3093	TV-181	6177	93 Microhenries
L31	1st Sound IF	1.2Ω		29053	17-3400	TV-151	1469	
L32	2nd Sound IF	5.5Ω	1.8Ω	29541	16-3445	TV-113 +	1468 =	
L33	Ratio Det.	4.6Ω	1.3ΩCT	29068	17-3493	TV-115 +	1498	Tertiary winding- .85Ω
L34	Horiz. Osc.	110Ω		29527	19-1576	TV-163	6210	

* Use one winding only.
† Parallel with 3.9KΩ resistor
▲ Disconnect capacitor in parallel.
■ Use adaptor plate.
= Drill one new mounting hole.

PACKARD-BELL
MODELS 2841, 2942, 3042, 3142 (Ch. 2840, 3040-1)

PARTS LIST & DESCRIPTION (continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	Packard Bell PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L35	.290A	41Ω	1.6HY	27005	C-2326 ①	C-2996	C-17X ①	C5037 ①	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Packard-Bell PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	1/4 A 250V	45005		313.250 (3AG S/B-1/4A)	357001	MDL 1/4	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Packard-Bell PART No.	SYLVANIA PART No.	FEDERAL PART No.	
M2	1N82		1N82 or A		UHF Mixer

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M3	Dial light	54002	#47
M4	Tuner	10534A	VHF only
M5	Tuner	10535C	VHF/UHF
M6	Trap		Antenna Filter (41MC)
M7	Swtich		TV phono
M8	Focus Magnet	28075	Includes centering device
M9	Ion trap	28106A	
	Cabinet		Order by model number and finish
	Knob	52085G	Fine Tuning
	Knob	52086D	Volume } Specify
	Knob	52087G	Contrast } Cabinet
	Knob	52089D	Chan. Selector } Finish
	Knob	52080	(2) TV-phono & tone)

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push on type control knobs from front panel.
2. Remove 13 wood screws. Remove rear cover.
3. Disconnect speaker plug, yoke plug, CRT socket and HV plug.
4. Remove 3 chassis bolts. Remove chassis.
5. Remove 4 speaker screws. Remove speaker.

PROPERTY OF
L. F. BLANKENSHIP
3934 MEADE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TROUBLE SHOOTING AIDS (cont)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light, substitute V27 and V28. Check B+ filter and decoupling network components.

SMALL AND/OR DIM PICTURE

Check by substitution V17, V27 and V28. Check B+ filter and decoupling network components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check fuse M1. Check by substitution V22, V23, V24, V25 and V26. Check waveform W18.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C96, C91, R109, R110, R108 and other associated components.	Check R101, R105, R106, C85, C101 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V22, V23, V24, V25, V26, V27 and V28. Check picture tube proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V22, V23, V24, V25, V26, V27 and V28. Check T2, T4A, C91, C96, R108, R109, R110 and other associated components.

GENERAL

RASTER SOUND NO PICTURE

See "Loss of Video".

RASTER PICTURE NO SOUND

See "Weak or No Sound".

RASTER NO SOUND NO PICTURE

Check by substitution V2, V3, V4, V5, V6, V7 and V8. Check associated circuit components for failure or change of value.

NO RASTER NO SOUND

See "Dead Set".

KEYSTONE EFFECT

Check T4, C97, R91, R92 and R93.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The channel adjustment screws are reached thru a hole (hole extends thru UHF tuner) just above and slightly to the left of the channel switch shaft .

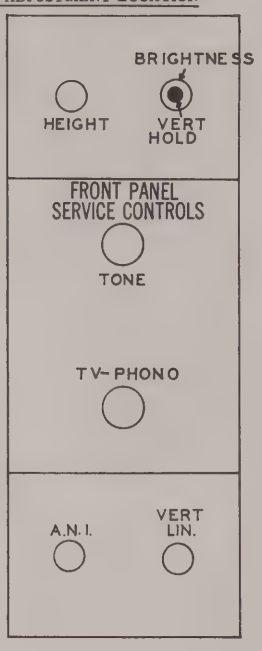
PICTURE TUBE SAFETY GLASS CLEANING

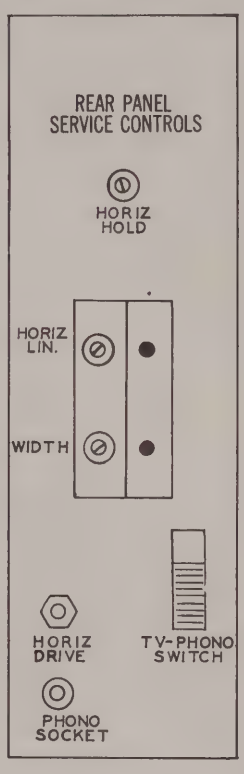
To clean safety glass remove three (3) wood screws holding wood strip at top front of cabinet. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





SPECIAL ADJUSTMENTS- ANI CONTROL

The ANI control should be adjusted, at the location where the receiver is to be used. Tune in the weakest signal available and proceed as follows:

1. Turn ANI control fully counter clockwise.
2. Turn control clockwise until picture begins to distort.
3. Turn control counter clockwise slightly beyond the point where the distortion disappears.
4. Check picture stability on all channels. If control is not adjusted on weakest signal available synchronization may be lost on some other channel.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horiz. Oscillator circuit can be made from rear panel of the chassis. Adjust the Horiz. hold slug until picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

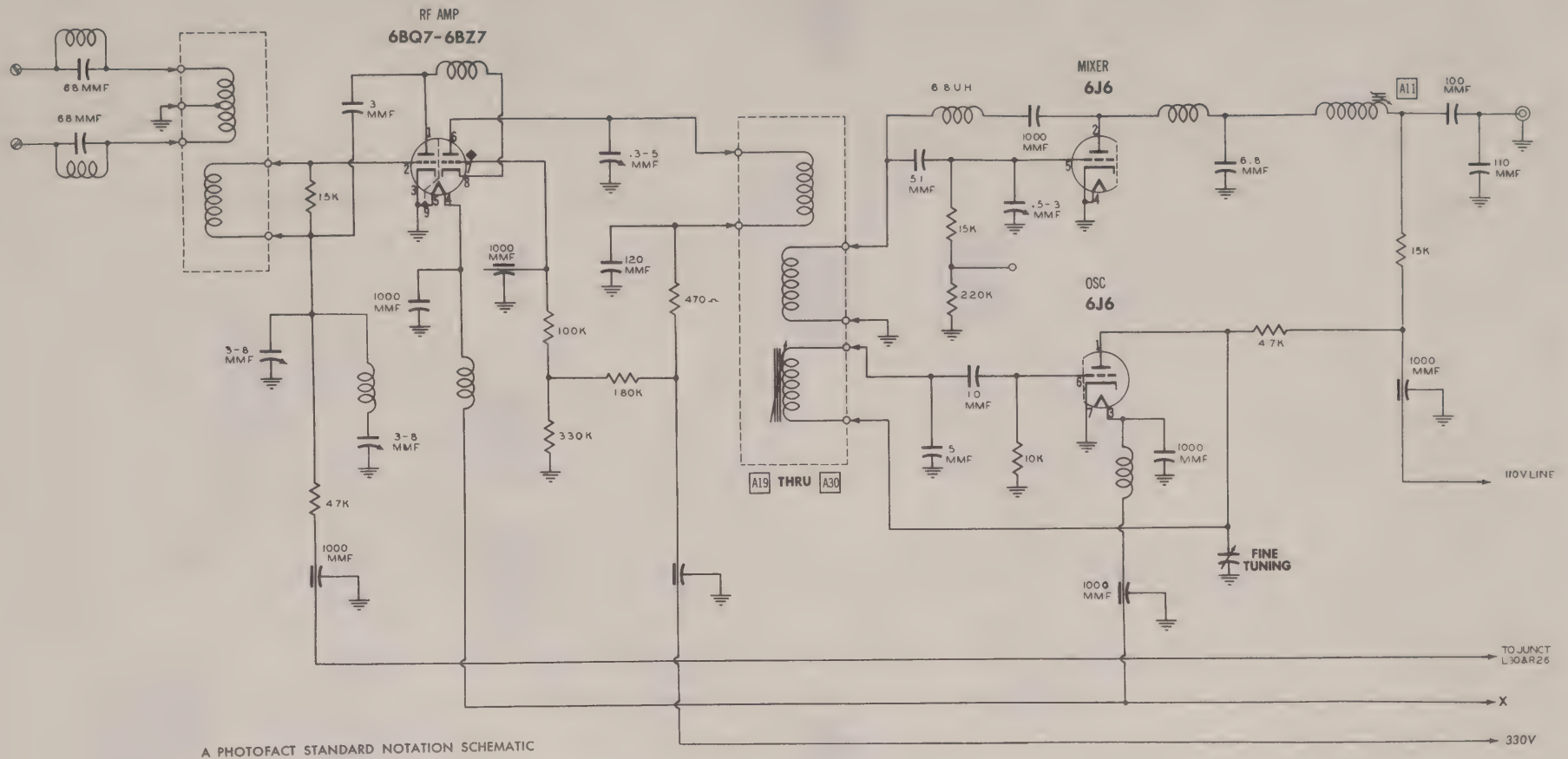
To eliminate Sound IF Detector Buzz, adjust the Ratio Detector Secondary (L33) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for Horiz. Sweep Circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the P. M. Focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ALTERNATE TUNER SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST
DENVER, COLO.

PROPERTY OF
DENVER, COLORADO

ESPEY
MODEL 300

FUNCTION SELECTOR SWITCH

VOLUME CONTROL ON-OFF SWITCH

RECORD COMPENSATION SWITCH

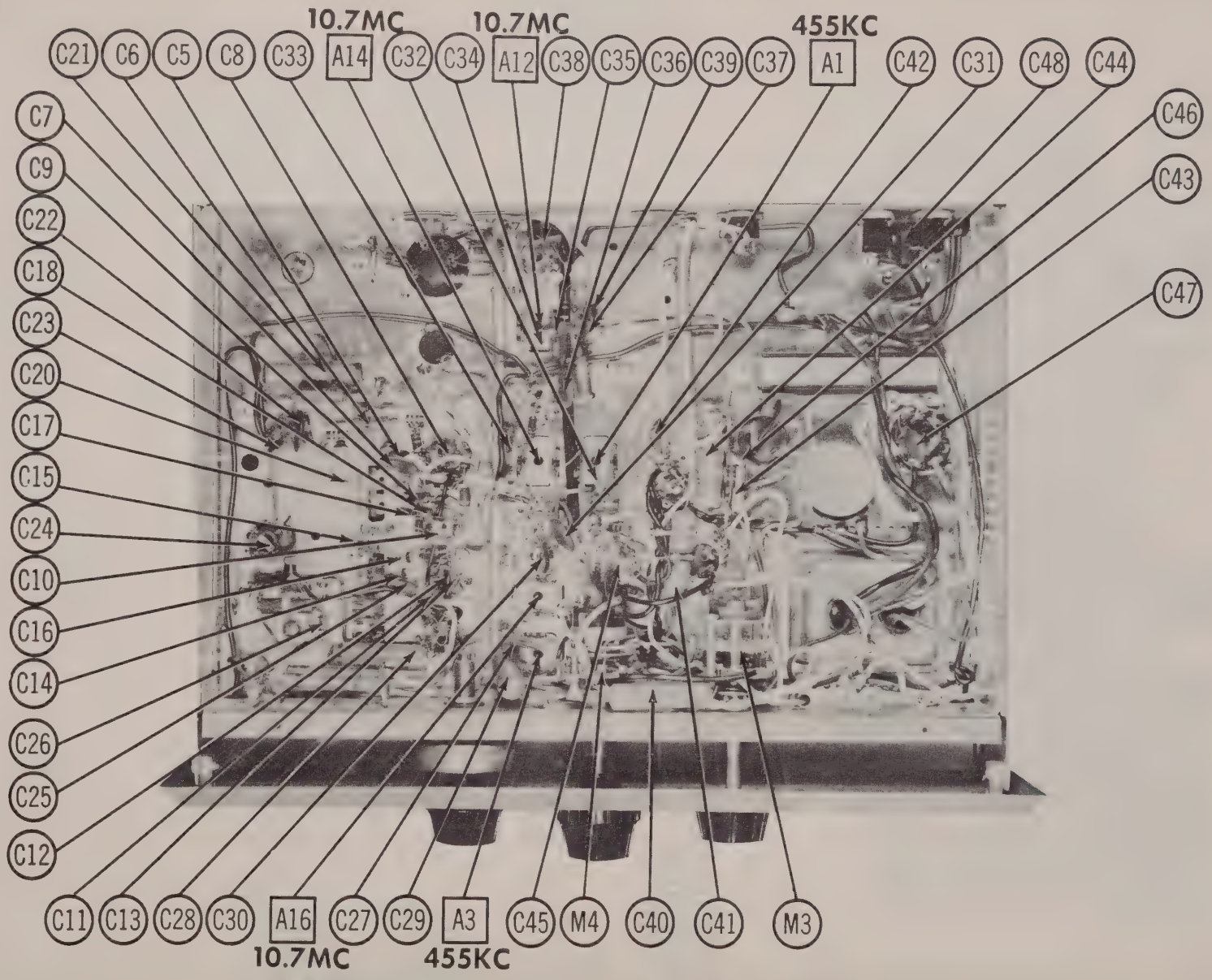
TUNING CONTROL

ESPEY
MODEL 300

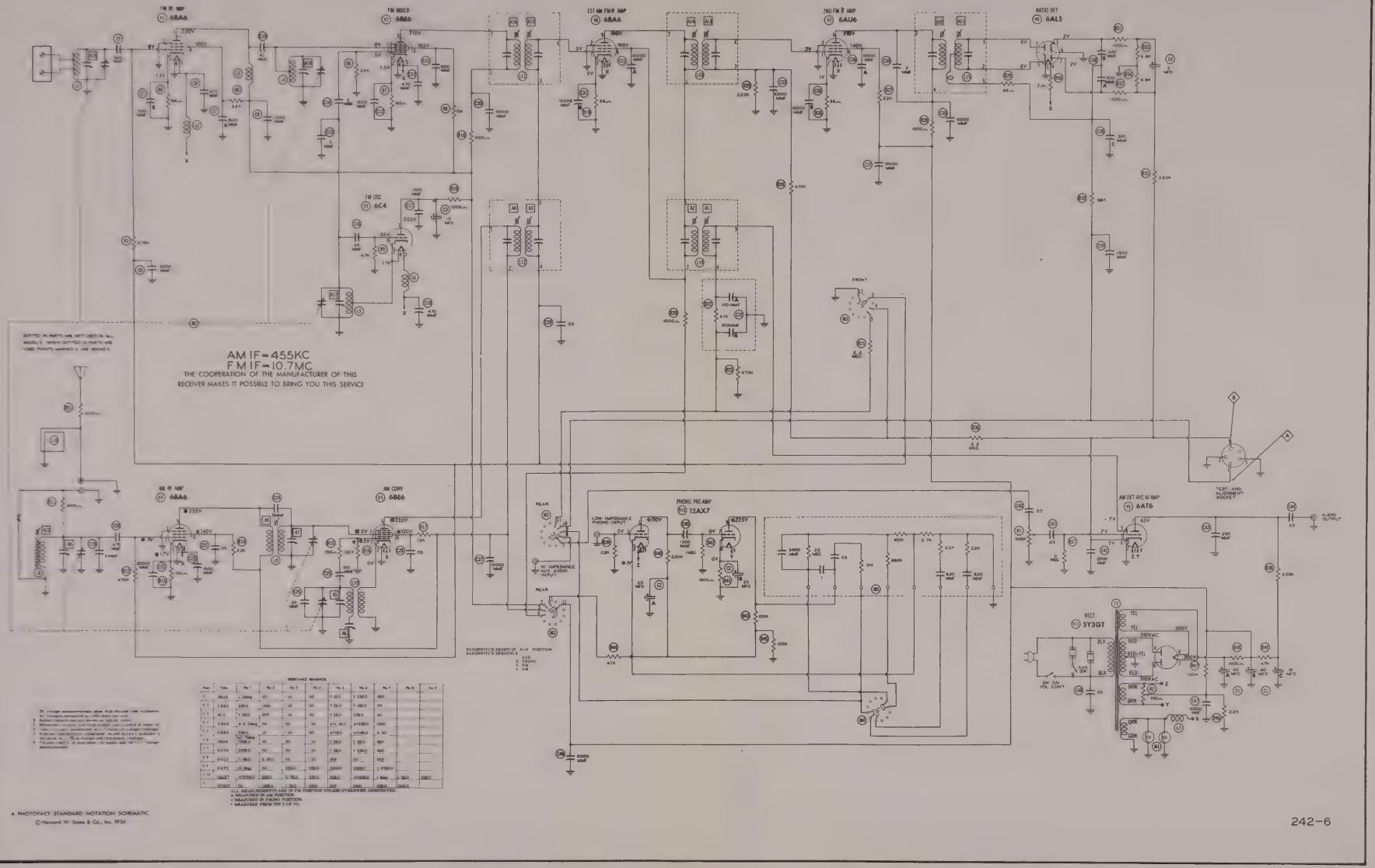
TRADE NAME	Espey Model 300	
MANUFACTURER	Espey Mfg. Co., Inc., 528 E. 72nd. St., New York 21, N.Y.	
TYPE SET	AC Operated AM-FM Superheterodyne Tuner For Custom Installations	
TUBES	Eleven	
POWER SUPPLY	105-125 Volts AC-50/60 Cycles	RATING .65 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	535-1720KC	FREQ. MOD. 88-108MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1954 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America



CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION


AM IF=455KC
FM IF=10.7MC.
THE COOPERATION OF THE MANUFACTURER OF THIS
RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
FM RF AMP V1 6AA6
FM MIXER V2 6BE6
FM OSC V3 6C4
1ST AM FM IF AMP V4 6BA6
2ND FM IF AMP V7 6AU6
RATIO DET V8 6AL5
AM RF AMP V1 6AA6
AM CONV V5 6BE6
PHONO PRE AMP V10 12AX7
AM DET AVC AF AMP V6 6AT6
RECT V11 5Y3GT
FRONT
REAR
LOW IMPEDANCE PHONO INPUT
HI IMPEDANCE AUX AUDIO INPUT
AUDIO OUTPUT
TEST AND ALIGNMENT SOCKET
SW ON VOL CONT
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
BANDSWITCH SHOWN IN AUX POSITION
BANDSWITCH SEQUENCE
1 AUX
2 PHONO
3 FM
4 AM
RESISTANCE READINGS
ALL MEASUREMENTS ARE IN FM POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN AM POSITION
* MEASURED IN PHONO POSITION
* MEASURED FROM PIN 3 OF V1.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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242-6

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set the dial pointer to the small index mark (gold mark) just to the left of "55" on the dial.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position to chassis as when receiver is in cabinet.
Connect amplifier (and speaker) to audio output jack on rear panel.

AM ALIGNMENT

Attenuate generator output to maintain 0.5 watt output meter indication. 0.5 watt is approximately 1.4 volts deflection across a 4Ω voice coil and 2 volts across an 8Ω voice coil.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 6BA6 (V6). Low side to chassis.	455KC (400∿Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	High side to pin 7 (grid) of 6BE6 (V5). Low side to chassis.	"	"	"	"	A3, A4	"
3.	5MMF	High side thru 5MMF to AM antenna socket. Low side to chassis.	1700KC	"	1700KC	"	A5	"
4.	"	"	550KC	"	550KC	"	A6	Adjust for maximum output. Repeat steps 3 and 4 until proper oscillator tracking is obtained.
5.	"	"	1550KC	"	1500KC (small index mark just to right of "150" on dial)	"	A7, A8	Adjust for maximum output.
6.	"	"	600KC	"	600KC	"	A9, A10	Adjust for maximum output. Repeat steps 5 and 6 until proper tracking is obtained.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (grid) of 6AU6 (V7). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
8.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A12	Adjust for maximum deflection. Repeat steps 7 and 8.
9.	"	High side to pin 1 (grid) of 6BA6 (V6). Low side to chassis.	"	"	"	"	A13 A14	Adjust for maximum deflection. Attenuate generator output to maintain not more than -1.5 volts at VTVM.
10.	"	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A15 A16	Adjust for maximum deflection. Repeat steps 9 and 10.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use only enough generator output to produce useable pattern on screen.
Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to pin 1 (grid) of 6BA6 (V6). Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A12 A13 A14	Disconnect stabilizing capacitor C4. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.	"	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	"	"	"	"	A15 A16	"
9.	"	"	"	"	"	Vert. Amp. to point Ⓐ. Low side to chassis.	A11	Reconnect stabilizing capacitor C4. Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines. Continue alignment with step 11.

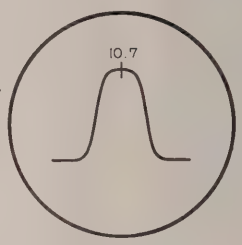


FIG. 1

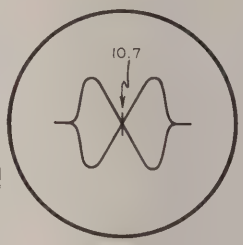


FIG. 2

FM RF ALIGNMENT

Attenuate generator output to maintain -1.5 volts on VTVM.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.	270Ω Carbon Resistor	High side thru 270Ω to FM antenna receptacle. Low side to chassis.	108MC	FM	108MC	DC probe to point Ⓑ. Common to chassis.	A17	Adjust for maximum deflection.
12.	"	"	88MC	"	"	"		Use tuning wand. If necessary, compress or expand L5 for maximum deflection. Repeat steps 11 and 12 until proper oscillator tracking is obtained.
13.	"	"	106MC	"	106MC	"	A18 A19	Adjust for maximum deflection.
14.	"	"	90MC	"	90MC	"		Check L4 and L1 with tuning wand. If necessary, compress or expand coil turns for maximum deflection. If necessary, repeat steps 13 and 14 until proper RF tracking is obtained.

HUM BALANCE ADJUSTMENT

If it becomes necessary to readjust the hum balance control (R2A) allow a 10 minute warm-up period with record player disconnected and perform the following operations:

(a) Set function switch to "phono" position.
(b) Set record equalizer to "AES" position.
(c) Turn volume control fully clockwise.
(d) Reverse line plug in AC outlet and leave it in that position which gives least residual hum.
(e) Adjust R2A for MINIMUM background noise and residual hum.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

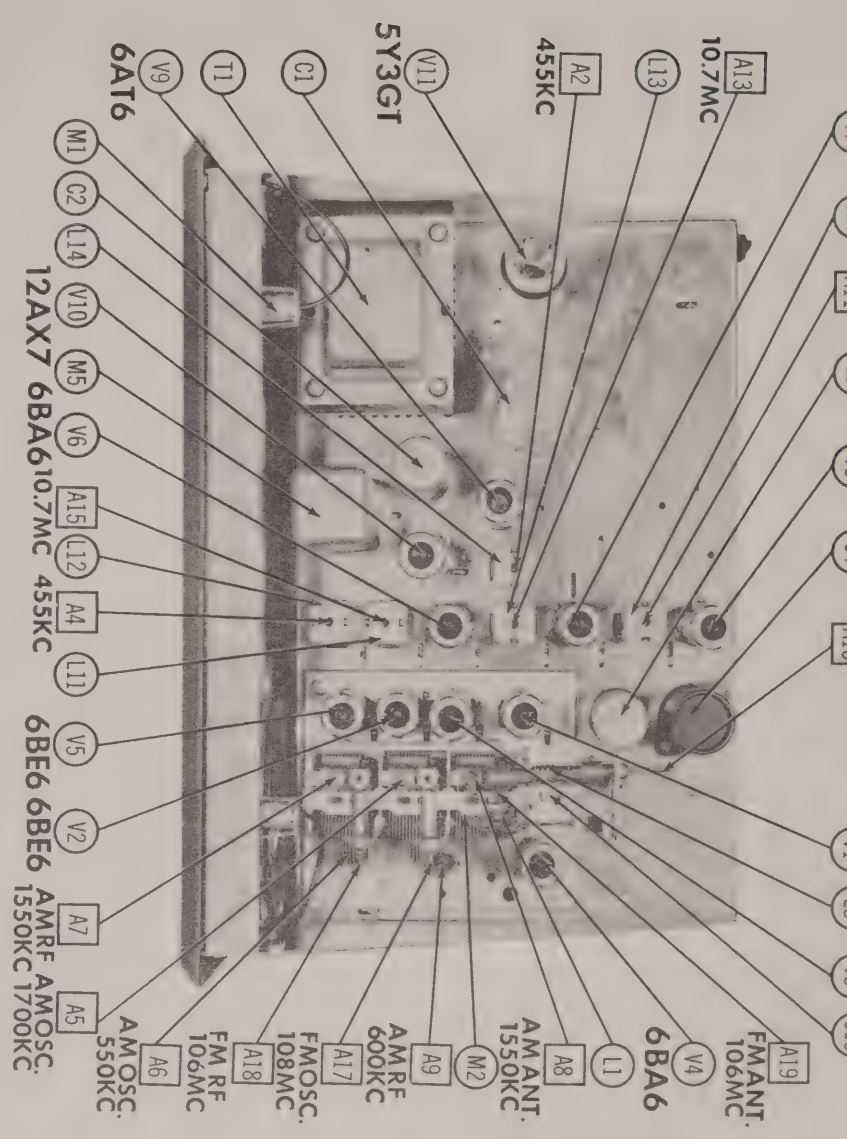
ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ESPEY PART No.	STANDARD REPLACEMENT		
V1	FM RF Amp.	6BA6	6BA6	7BK	
V2	FM Mixer	6BE6	6BE6	7CH	
V3	FM Oscillator	6C4	6C4	6BG	
V4	AM RF Amp.	6BA6	6BA6	7BK	
V5	AM Converter	6BE6	6BE6	7CH	
V6	AM-FM IF Amp.	6BA6	6BA6	7BK	
V7	2nd. FM IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AM Det.-AF Amp.	6AT6	6AT6	7BT	
V10	Phono Pre-Amp.	12AX7	12AX7	9A	
V11	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ESPEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450		AFH3-43		C034		FP376.8	TVL-3785	
B	■40	450								
C	▲10	450								
C2A	■20	450		AFH3-136		B040		FP234		
B	▲25	50						TC30		
C3	10	450		AFH1-48		A043		FP231	TVA-1705	
C4	5	250		PRS250/4		BR425		TC50X	TVA-1501	
C5	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C6	3000			SI3000	D6-302	TP60	GP2-333-302	UC-523	5GA-D3	
C7A	1500			BPD-2X0015	DD3-2X152	DK071	812-0015	DCD-5215	5HK-2D15	
B	1500									
C8	470			BPD-00047	DD-471	K060	821-471	UC-5347	5GA-T47	
C9	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C10	40						NP0B-400			
C11	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C12	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C13	470			BPD-00047	DD-471	K060	821-471	UC-5347	5GA-T47	
C14	2						NP0A-2			
C15	15			SI15NP0	TCZ-15	TZ11	NP9A-150		5TCC-Q15	
C16	40						NP0B-400			
C17	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C18	470			BPD-00047	DD-471	K060	821-471	UC-5347	5GA-T47	
C19	5			SI5NP0			NP0A-050	ZT-555	5TCUB-V5	
C20	470			BPD-00047	DD-471	K060	821-471	UC-5347	5GA-T47	
C21	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C22	20000			BPD-02	DD-203	K085		DC-512	5HK-S2	
C23	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C24	5			SI5NP0			NP0A-050	ZT-555	5TCUB-V5	
C25	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C26	20			SI20NP0	TCZ-20	TZ13	NP0A-200	ZT-542	5TCC-Q2	
C27	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C28	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C29	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C30	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C31A	10000			BPD-2X01	DD3-103	DK082	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		
C32A	100			*PA-97-1	♦PC-50	♦111TM1	♦1403-01	UC-531	♦100C1	
B	100							UC-531		
C33	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C34	2									
C35	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C36A	10000			BPD-2X01	DD3-103	DK082	811-01	DC-511	5HK-2S1	
B	10000						811-01	DC-511		
C37	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C38A	300			SI300	D6-301	TP42	GP1K-301	UC-533	5GA-T3	
B	300			SI300	D6-301	TP42	GP1K-301	UC-533	5GA-T3	Note 2
C	300			SI300	D6-301	TP42	GP1K-301	UC-533	5GA-T3	
C39	1500			BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	Note 1
C40	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C41	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C42	2000			SI2000	D6-202	TP56	GP2L-202	UC-522	5HK-D2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA ESPEY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C43	250	500		1468-00025		5W5T25		MC240	1FM-325	
C44	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C45	1500			S11500	D6-152	TP54	GP2L-152	UC-5215	5GA-D15	
C46	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C47	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C48	.05	400		489ZX-05		PJ4S5		PT415	4TM-S5	

♦ Items C32A, C32B and R22 are combined in one unit.
Note 1. Some Models may use a 1000MMF in this application.
Note 2. Items C38A, C38B, C38C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ESPEY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500KΩ	½	B9. 314-A					Switch-volume & switch
R2A	100Ω	2	A9. 310-A	W100	A43-100	VK-121	R100L	Hum balance-wire wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ESPEY PART No.	IRC PART No.	NOTES
R3	470KΩ	½		BTS-470K	
R4	68Ω	½		BTS-68	
R5	22KΩ	1		BTA-22K	
R6	22KΩ	½		BTS-22K	
R7	150Ω	½		BTS-150	
R8	15KΩ	2		BTB-15K	
R9	47KΩ	½		BTS-47K	
R10	1000Ω	½		BTS-1000	
R11	1000Ω	½		BTS-1000	Note 1
R12	470KΩ	½		BTS-470K	
R13	100Ω	½		BTS-100	
R14	22KΩ	1		BTA-22K	
R15	150Ω	½			
R16	22KΩ	½		BTS-22K	
R17	15KΩ	2		BTB-15K	
R18	1000Ω	½		BTS-1000	
R19	68Ω	½		BTS-68	
R20	1000Ω	½		BTS-1000	
R21	2. 2Meg	½		BTS-2. 2Meg	
R22	47KΩ	½		BTS-47K	
R23	470KΩ	½		BTS-470K	
R24	470KΩ	½		BTS-470K	
R25	220KΩ	½		BTS-220K	
R26	68Ω	½		BTS-68	
R27	22KΩ	1		BTA-22K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA ESPEY PART No.	IRC PART No.	NOTES
R28	1000Ω	½		BTS-1000	
R29	68Ω	½		BTS-68	
R30	68KΩ	½		BTS-68K	
R31	1000Ω	½		BTS-1000	
R32	1500Ω	½		BTS-1500	
R33	6800Ω	½		BTS-6800	
R34	6800Ω	½		BTS-6800	
R35	220KΩ	½		BTS-220K	
R36	2. 2Meg	½		BTS-2. 2Meg	
R37	10 Meg	½		BTS-10 Meg	
R38	220KΩ	½		BTS-220K	
R39	22KΩ	½		BTS-22K	
R40	220KΩ	½		BTS-220K	
R41	1800Ω	½		BTS-1800	
R42	1 Meg	½		BTS-1 Meg	
R43	100KΩ	½		BTS-100K	
R44	47KΩ	½		BTS-47K	
R45	100KΩ	½		BTS-100K	
R46	22KΩ	½		BTS-22K	
R47	150KΩ	½		BTS-150K	
R48	1000Ω	15		2D-1000	
R49	47KΩ	½		BTS-47K	
R50	2Ω	2			
R51	1000Ω	½		BTS-1000	

Note 1. Not used in all models.
♦ Items R22 & 32A, C32B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA ESPEY PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .65A	600VCT .079ADC	5VAC @ 2A	6. 3VAC @ .59A SEC. 4 6. 3VAC @ 2. 4A	B18. 127					

PARTS LIST & DESCRIPTION (continued)

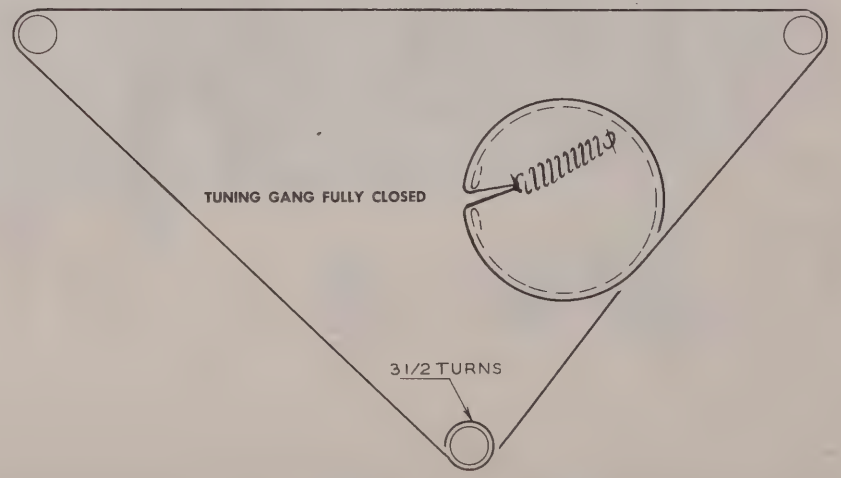
COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ESPEY PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	FM Ant. Coil	0Ω (tapped)		A2. 579				
L2	Fil. Choke	. 4Ω		2. 703	19-1001	TV-189	4604	1. 5 Microhenries; IRC Part # CLA
L3	FM RF Choke	1. 1Ω		B2. 402	19-1002		4606	3 Microhenries
L4	FM RF Coil	0Ω (tapped)		A2. 580				
L5	FM Osc. Coil	0Ω (tapped)		B2. 735				
L6	Fil. Choke	. 4Ω		2. 703	19-1001	TV-189	4604	1. 5 Microhenries; IRC Part # CLA
L7	Fil. Choke	. 1Ω		2. 702	19-1001	TV-189	4604	1. 5 Microhenries; IRC Part # CL-1
L8	AM Ant. Coil	1. 2Ω		2. 699			6300	
L9	AM RF Coil	95Ω	2. 4Ω	B2. 409	14-1072	BC-382	A-5495-RF	
L10	AM Osc. Coil	. 9Ω	7Ω	A2. 410	14-1074	BC-397	70-Osc.	
L11	1st FM IF	. 7Ω	. 7Ω	C2. 415	16-3487	FM-254	1463	
L12	1st AM IF	10Ω	10Ω	2. 414	16-6758	BC-352	12-C1	
L13	2nd FM IF	. 7Ω	. 7Ω	C2. 415	16-3487	FM-254	1463	
L14	2nd AM IF	10Ω	10Ω	2. 414	16-6758	BC-353	12-C2	
L15	Ratio Det.	1. 5Ω	. 9ΩCT	C2. 474	17-3488 †	FM-255	1465	Tertiary winding= . 4Ω
L15	Ratio Det.	1. 5Ω	. 0					Not used in all models
L16	AM Loop Ant.	. 8Ω						

† Cut out chassis hole and drill mounting holes.

MISCELLANEOUS

ITEM No.	PART NAME	ESPEY PART No.	NOTES
M1	Dial light		# 47 - 2 used
M2	Tuning cap	B6. 070	(28-515MMF, 39-525MMF, 35-512MMF)
M2	Switch	B12. 296	Function
M4	Switch	B9. 314	Record equalizer
M5	RC network		Record equalizer
A6	Trimmer cap	C13. 518	500-1000MMF (AM Osc. Padder)



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MODEL 21-S-354

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RCA VICTOR MODEL 21-S-354

TRADE NAME	RCA Victor	MODELS	CHASSIS	TUNER
		21-S-362M, 21-S-367	KCS83	KRK29
		21-S-362MU, 21-S-367U	KCS83A	KRK29A/27
		21-S-354	KCS83C	KRK29B
		21-S-353, 21-S-355	KCS83C	KRK29
		21-S-353G, 21-S-354G, 21-S-355G, 21-S-357G, 21-S-359G, 21-S-362G	KCS83C or KCS83PC - "G",	KRK29
		21-S-367G, 21-S-369G	KCS83PK	KRK22C
		21-S-353U, 21-S-354U, 21-S-355U	KCS83D	KRK29A/27
		21-S-353GU, 21-S-354GU, 21-S-355GU, 21-S-357GU, 21-S-359GU, 21-S-362GU, 21-S-367GU, 21-S-369GU	KCS83D or KCS83PD - "GU"	KRK29A/27
		21-S-348, 21-S-348G	KCS83PJ	KRK29
		21-S-348G	KCS83PL	KRK22C
		21-S-348GU	KCS83PM	KRK29A/27

MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	Television Receiver
TUBES	Twenty-two
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.9 Amp. @ 117 Volts AC
TUNING RANGE -	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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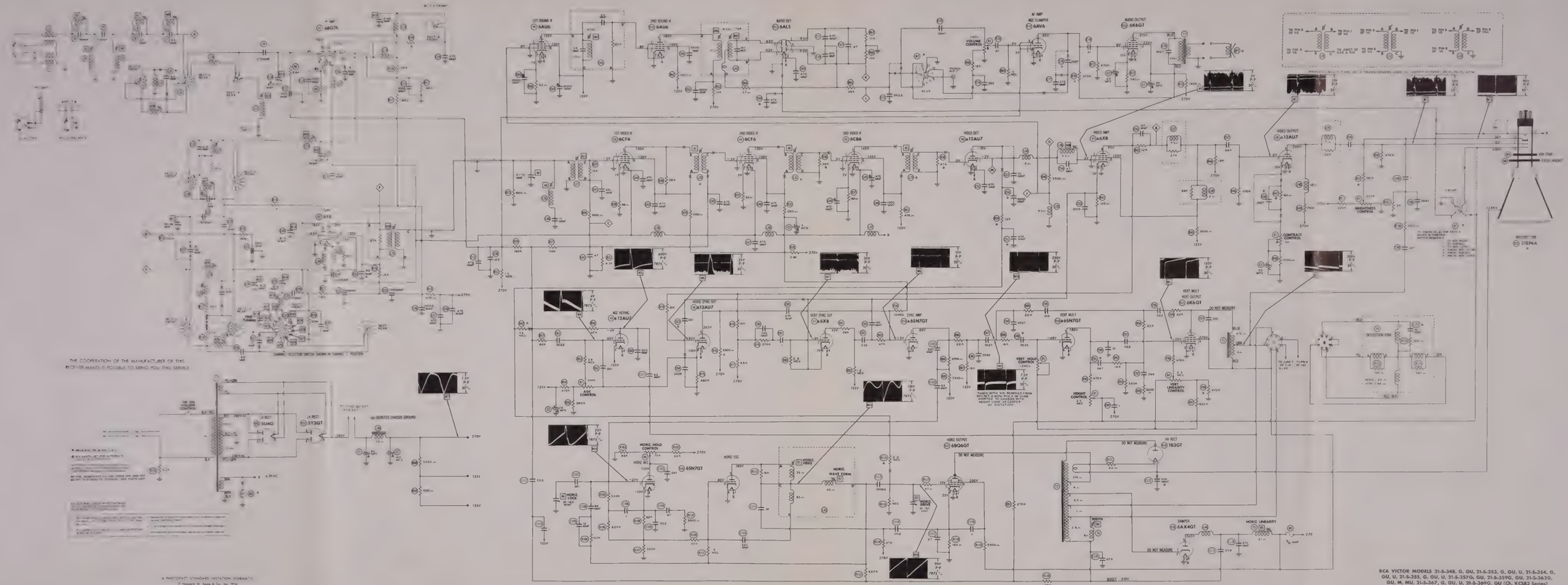

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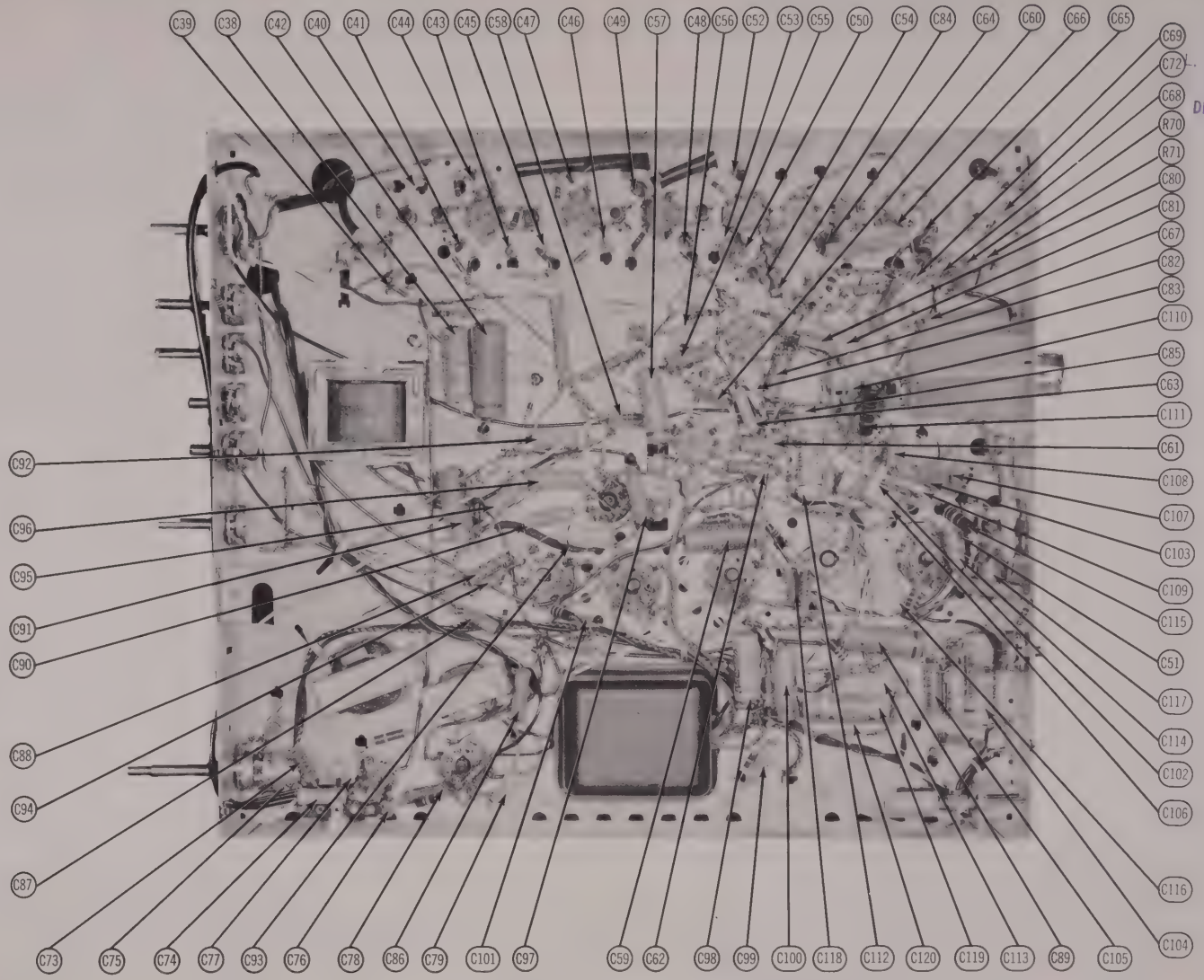

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CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube (V16) from its socket.

KRK29 OR KRK29A ANTENNA MATCHING UNIT ALIGNMENT

The antenna matching unit has been properly aligned at the factory. The RF unit is aligned with a particular antenna matching unit in place.
If a new antenna unit is installed, the RF unit should be realigned. Alignment should not be attempted without the proper alignment facilities.
The FM trap, L7, may be aligned without adversely affecting the alignment of the unit. Disconnect the lead from the FM trap (L7) to the channel selector switch. Use a short jumper to connect point (A) on the matching unit thru a .001MFD capacitor to pin 1 (grid) of 6CF6 (V4). Remove 6CF6 (V3) from its socket.
The matching unit cover must be in place during alignment. Connect the ends of a 1000Ω potentiometer across a 7.5 volt battery capable of withstanding considerable current drain. Connect the positive terminal to chassis and connect the potentiometer arm to point (C). Set the potentiometer arm to obtain -5 volts at point (C).
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	Not used	45.75MC (400∿Mod)	Any	Vert. Amp. to point (B). Low side to chassis.	A1	Set scope gain for maximum. Turn AGC. Adjust for MINIMUM 400∿ response on scope.
2.	"	"	"	41.25MC (400∿ Mod)	"	"	A2	"
3.	"	"	50MC (20MC Swp)	50MC 52MC 53MC	"	Vert. Amp. thru detector (Fig.1) to point (A). Low side to chassis.	A3, A4	Remove the .001MFD capacitor (see instructions above) from point (A) and connect a 300Ω, ½ watt carbon resistor from point (A) to chassis using very short leads. Adjust to obtain response curve similar to Fig. 2. Repeat steps 1, 2 and 3 until no further improvement is noted. Remove the 300Ω resistor and detector probe. Restore connection between L7 and the channel switch. Replace V3 in its socket.

KRK22C ANTENNA MATCHING UNIT ALIGNMENT (CH. KCS83PK & KCS83PL)

The antenna matching unit has been properly aligned at the factory. The RF unit is aligned with a particular antenna matching unit in place. If a new antenna unit is installed, the RF unit should be realigned. Alignment should be attempted without the proper alignment facilities. The FM trap (A49) may be aligned without adversely affecting the unit. Disconnect the lead from point (A) to the channel selector switch. Use a short jumper to connect point (A) on the matching unit through a .001MFD capacitor to Pin 1 (grid) of the second video IF amplifier (6CF6). Remove the first video IF amplifier (6CF6) from its socket. The matching unit cover must be in place during alignment.
Connect the ends of a 1000Ω potentiometer across a 7.5 volt battery capable of withstanding considerable current drain. Connect the positive terminal to chassis and connect the potentiometer arm to point (C). Set the potentiometer arm for -5 volts at point (C). Follow the procedure outlined under steps 1, 2 and 3 for "KRK29 or KRK29A antenna matching unit alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

VIDEO IF ALIGNMENT (MODELS 21-S-354 & 21-S-362, MODELS 21-S-348 THRU 21-S-369)

Leave bias connected as under " antenna matching unit alignment ". Turn AGC control fully clockwise Models 21-S-348 through 21-S-369 incorporate three printed circuit type video IF transformers. Location of these transformers and their A numbers is shown in Fig. 6.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to terminal "A" of L27. Low side to terminal "B".	Not used	44.5MC	Any not used locally	Use VTVM. DC probe to point (D). Common to chassis.	A5	Attenuate generator output to maintain -3 volts at VTVM. Adjust for maximum deflection.
5.	"	"	"	45.5MC	"	"	A6	"
6.	"	"	"	43.0MC	"	"	A7	"
7.	"	"	"	47.25MC	"	"	A8	Adjust for MINIMUM deflection. Use sufficient generator output to produce -3 volts at VTVM.
8.	.0015MFD Ceramic Capacitor	High side to point (E). Low side to tuner chassis. Use very short leads.	44MC (10MC Swp)	42.5MC 45.75MC 47.25MC	4	Vert. Amp. thru detector (Fig.1) to pin 5 (plate) of 6CF6 (V3). Low side to chassis.	A10, All A9	Connect 330Ω resistors from plate to screen of V4 and V5. Preset A9 to MINIMUM capacity. Connect 180Ω carbon resistor from plate to screen of V3. Set AGC control fully clockwise. Couple a second signal generator loosely to detector (Fig. 1) to furnish markers. Attenuate sweep output to maintain 0.3 volt peak to peak for final adjustments. Adjust A10 and All for maximum gain with 45.75MC marker at 75%. Adjust A9 to place 42.5MC marker at 70% on response curve as shown in Fig. 3. Remove detector probe and disconnect the 180Ω and the two 330Ω resistors.
9.	"	"	"	42.5MC 45.0MC 45.75MC 46.5MC	"	Vert. Amp. to point (B). Low side to chassis.		Adjust sweep generator output for 3 volts peak to peak on scope. Couple the marker generator loosely to pin 1 (grid) of V3. Retouch A5, A6 and A7 to obtain response curve similar to Fig. 4. Continue alignment with step 14.

TELEVISION CHANNEL FREQUENCIES

Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier	Channel No.	Frequency Band (Mc)	Video Carrier	Sound Carrier
2	54-60	55.25	59.75	23	524-530	525.25	529.75	44	650-656	651.25	655.75	64	770-776	771.25	775.75
3	60-66	61.25	65.75	24	530-536	531.25	535.75	45	656-662	657.25	661.75	65	776-782	777.25	781.75
4	66-72	67.25	71.75	25	536-542	537.25	541.75	46	662-668	663.25	667.75	66	782-788	783.25	787.75
5	76-82	77.25	81.75	26	542-548	543.25	547.75	47	668-674	669.25	673.75	67	788-794	789.25	793.75
6	82-88	83.25	87.75	27	548-554	549.25	553.75	48	674-680	675.25	679.75	68	794-800	795.25	799.75
7	174-180	175.25	179.75	28	554-560	555.25	559.75	49	680-686	681.25	685.75	69	800-806	801.25	805.75
8	180-186	181.25	185.75	29	560-566	561.25	565.75	50	686-692	687.25	691.75	70	806-812	807.25	811.75
9	186-192	187.25	191.75	30	566-572	567.25	571.75	51	692-698	693.25	697.75	71	812-818	813.25	817.75
10	192-198	193.25	197.75	31	572-578	573.25	577.75	52	698-704	699.25	703.75	72	818-824	819.25	823.75
11	198-204	199.25	203.75	32	578-584	579.25	583.75	53	704-710	705.25	709.75	73	824-830	825.25	829.75
12	204-210	205.25	209.75	33	584-590	585.25	598.75	54	710-716	711.25	715.75	74	830-836	831.25	835.75
13	210-216	211.25	215.75	34	590-596	591.25	595.75	55	716-722	717.25	721.75	75	836-842	837.25	841.75
14	470-476	471.25	475.75	35	596-602	597.25	601.75	56	722-728	723.25	727.75	76	842-848	843.25	847.75
15	476-482	477.25	481.75	36	602-608	603.25	607.75	57	728-734	729.25	733.75	77	848-854	849.25	853.75
16	482-488	483.25	487.75	37	608-614	609.25	613.75	58	734-740	735.25	739.75	78	854-860	855.25	859.75
17	488-494	489.25	493.75	38	614-620	615.25	619.75	59	740-746	741.25	745.75	79	860-866	861.25	865.75
18	494-500	495.25	499.75	39	620-626	621.25	625.75	60	746-752	747.25	751.75	80	866-872	867.25	871.75
19	500-506	501.25	505.75	40	626-632	627.25	631.75	61	752-758	753.25	757.75	81	872-878	873.25	877.75
20	506-512	507.25	511.75	41	632-638	633.25	637.75	62	758-764	759.25	763.75	82	878-884	879.25	883.75
21	512-518	513.25	517.75	42	638-644	639.25	643.75	63	764-770	765.25	769.75	83	884-890	885.25	889.75
22	518-524	519.25	523.75	43	644-650	645.25	649.75								

RCA VICTOR MODELS 21-S-348, G, GU, 21-S-353, G, GU, U, 21-S-354, G, GU, U, 21-S-355, G, GU, U, 21-S-357G, GU, 21-S-359G, GU, 21-S-362G, GU, M, MU, 21-S-367, G, GU, U, 21-S-369G, GU (Ch. KCS83 Series)

ALIGNMENT INSTRUCTIONS (cont)

VIDEO IF ALIGNMENT (MODELS 21-S-354U THRU 21-S-362U, MODELS 21-S-346U THRU 21-S-369U)

Leave bias connected as under " antenna matching unit alignment. Turn AGC control fully clockwise. Models 21-S-348U thru 21-S-369U incorporate three printed circuit tube video IF transformers. Location of these transformers and their A numbers is shown in Fig. 6.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to terminal "A" of first video IF transformer. Low side to terminal "B".	Not used	44.5MC	Any not used locally	Use VTVM. DC probe to point (D). Common to chassis.	A5	Attenuate generator output to maintain -3 volts at VTVM. Adjust for maximum deflection.
5.	"	"	"	45.5MC	"	"	A6	"
6.	"	"	"	43.0MC	"	"	A7	"
7.	"	"	"	47.25MC	"	"	A8	Use sufficient generator output to produce -3 volts at VTVM. Adjust for MINIMUM deflection.
8.	.0015MFD ceramic capacitor	High side to point (E). Low side to tuner chassis. Use very short leads.	44MC (10MC Swp)	42.5MC 45.75MC 47.25MC	4	Vert. Amp. thru detector (Fig.I) to pin 5 (plate) of first video IF amp. Low side to chassis.	A10, A11 A9	Connect 330Ω carbon resistors across primaries of third and fourth video IF transformers. Preset A9 to MINIMUM capacity. Connect 180Ω carbon resistor across primary of second video IF transformer. Couple a second signal generator loosely to detector probe (Fig.I) to furnish markers. Attenuate sweep output to maintain 0.3 volts peak to peak for final adjustments. Adjust A10 and A11 for maximum gain with 42.5, 45.75MC marker at 75%. Adjust A9 to place 42.5MC marker at 70% on response curve as shown in Fig. 3. Remove detector probe , the 180Ω and the two 300 resistors.
9.	"	"	"	42.5MC 45.0MC 45.75MC 46.5MC	"	Vert. Amp. to point (D). Low side to chassis.		Adjust sweep generator output for 3 volts peak to peak on scope. Couple the marker generator loosely to grid of first video IF amplifier. Retouch A5, A6 and A7 to obtain response curve similar to Fig. 4.
10.	1000Ω Carbon Resistor in series with .0015M MFD ceramic capacitor	High side thru dummy to rear terminal of 1N82 crystal holder. Low side to tuner chassis. Use very short leads.	44MC (10MC Swp)	41.25MC 46.75MC	47 (670MC)	Vert. Amp. thru detector (Fig.I) to junction of 180Ω resistor and .0015MFD capacitor at point (F). (See remarks) Low side to tuner chassis.	A12, A13	Set UHF changeover switch to UHF position. Connect a .0015MFD capacitor in series with 180Ω carbon resistor from point (F) to chassis with the capacitor end connected to point (F). Couple second signal generator to detector probe (Fig.I) to furnish markers. Connect the potentiometer arm of a second bias supply to the tuner AGC terminal. Connect positive side to chassis. Adjust for -3 volts at tuner AGC terminal. Attenuate sweep generator output to produce 0.3 volt peak to peak on scope. Adjust A12 and A13 for maximum gain with video and sound markers not lower than 90% or response curve as in Fig. 5. Remove resistor, capacitor and detector probe from point (F).
11.		"	"	"	"	Vert. Amp. to point (D). Low side to chassis.		Attenuate sweep generator output to maintain 3 volts peak to peak on scope. If necessary, retouch A12 and A13 only to obtain response similar to Fig. 5.
12.	Two 130Ω Carbon Resistors	Across VHF antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (D). Low side to chassis.		Couple marker generator loosely to grid of first video IF amplifier. Leave the AGC bias at -3 volts and the IF bias at -5 volts. Check all channels for response similar to Fig. 4. If necessary, SLIGHTLY retouch A5 and A6 to correct any overall tilt that is essentially the same on all channels.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
13.	Remove VHF sweep generator and connect UHF sweep generator to antenna terminals. Check all UHF channels for response similar to Fig. 4. If necessary, SLIGHTLY retouch A5 and A6 to correct any overall tilt. Disconnect generators and bias supplies.							

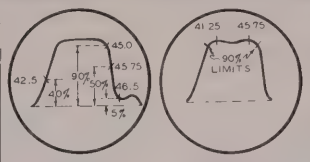


FIG.4

FIG.5

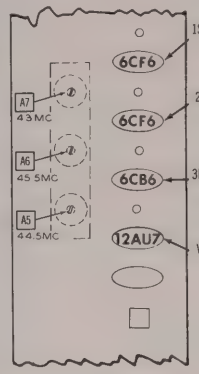


FIG.6

FIG.7

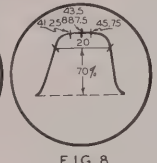


FIG.8

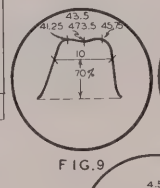


FIG.9

FIG.10

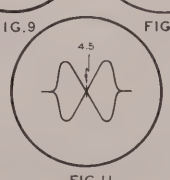


FIG.11

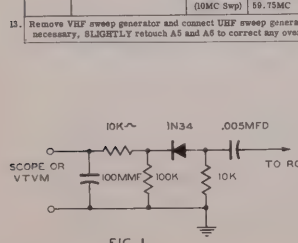


FIG.1

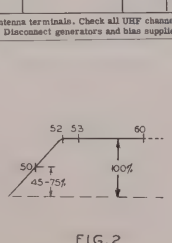


FIG.2

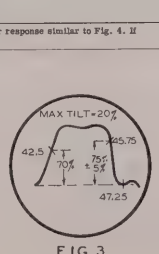


FIG.3

KRK29B TUNER ALIGNMENT (MODELS 21-S-354 & 21-S-362, MODELS 21-S-348 THRU 21-S-369U)

An RF unit which is operative and requires only minor touch-up adjustments will require no pre-setting of adjustments. Where complete alignment is necessary make the following adjustments.
Pre-set A14 all the way out. Set channel 7 to 13 oscillator slugs one turn from tight. Adjust A10 so that slug is all the way out. Disconnect the link from terminals "A" and "B" of L27 (first video IF trans) and terminate the link with a 39Ω carbon resistor.
Tuner alignment as outlined below requires the use of a heterodyne frequency meter.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
14.	Direct	High side to point (A). Low side to chassis.	Not used	43.5MC (400%Mod)	2	Vert. Amp. to point (G). Low side to chassis.	A15	Short the tuner AGC terminal to ground. Adjust scope for maximum gain and signal generator for maximum output. Adjust A15 for MINIMUM 400% indication on scope. Remove short from AGC terminal.
15.		RF input of heterodyne frequency meter to end of insulated wire inserted in hole provided for adjustment of A17.		Set freq. meter to 227MC	8	Not used	A18, A14	Connect the potentiometer arm of the bias supply to the tuner AGC terminal. Connect the positive lead to tuner chassis. Adjust for -3 volts at tuner AGC terminal. Preset A18 for -3 volts on VTVM at point (G). (Limits of oscillator injection voltage are two 5.5 volts). Turn fine tuning control fully clockwise. Adjust A18 for audible beat on frequency meter. Adjust A14 clockwise until beat note just begins to change, then turn one full turn in same clockwise direction. Return fine tuning control to its mid-range position.
	NOTE: If channel 8 oscillator frequency cannot be reached by adjustment of A18 switch to channel 13 and adjust A19 for channel 13 oscillator frequency, then switch to channel 12 and adjust A20 for channel 12 oscillator frequency. Continue down to channel 8 adjusting proper oscillator trimmer to obtain proper oscillator frequency on each channel. Also, on channel 8, adjust A18 for channel 8 oscillator frequency. Switch to channel 13 and adjust A19, then switch back to channel 8 and adjust A18 again.							
16.	Two 150Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (10MC Swp)	181.25MC 185.75MC	8	Vert. Amp. to point (G). Low side to chassis.	A31, A17, A32, A33	Set A10 to maximum counter clockwise rotation. If a separate marker generator is used connect it loosely to antenna terminals. Adjust scope for maximum gain and attenuate sweep generator output for a MINIMUM signal input to produce useable pattern on scope. Adjust A31, A17, A32 and A33 for response similar to Fig. 7.
17.	Connect the DC probe of VTVM to point (G). Common to chassis. Adjust A16 for -3 volts at point (G). Readjust A14, A17, A31 and A32 for response similar to Fig. 7. Adjust A33 for maximum gain at mid-point of response curve. If necessary, repeat until desired response is obtained.							
18.		Connect frequency meter as in step 15.	Not used	Freq. meter to 257MC	13	Not used	A19	Turn fine tuning control fully clockwise. Adjust A19 for audible beat on frequency meter. SLIGHTLY overshoot the adjustment an additional turn in the same direction, and then adjust A14 to again obtain an audible beat.
19.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	"	Vert. Amp. to point (G). Low side to chassis.	A34 A35	Adjust for response similar to Fig. 7. Turn off generator and check oscillator injection voltage at point (G) with VTVM. Voltage should be within limits (2 - 5.5 volts). If A16 required readjustment turn sweep generator back on and recheck channel 13 response. If necessary, retouch A34 and A35 to obtain desired response.
20.		Connect frequency meter as in step 15.	Not used	Freq. meter to 227MC	8	Not used	A14	Check for audible beat on frequency meter. If necessary, readjust A14 for proper oscillator frequency.
21.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (10MC Swp)	181.25MC 185.75MC	"	Vert. Amp. to point (G). Low side to chassis.	A31, A17 A32 A33	If necessary, retouch A31, A17, A32 and A33 to obtain response similar to Fig. 7. If A31 required adjustment turn off generator and switch back to channel 13 and check oscillator injection voltage at point (G) with VTVM. If the oscillator injection trimmer, A16, was far off it may be necessary to repeat steps 20 and 21 several times before proper setting of A16 is obtained.
22.		Connect frequency meter as in step 15.	Not used	Freq. meter to 129MC	6	Not used	A26	Set fine tuning control to its mid-range position. Adjust A26 for audible beat on frequency meter.
23.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point (G). Low side to chassis.	A36 A37 A38	Adjust for response similar to Fig. 7. Check oscillator injection voltage at point (G) with VTVM. If necessary, readjust A16. If A16 required readjustment switch the receiver and generator to channel 8 If necessary, retouch A31 for response similar to Fig. 6. Recheck A14 and A18 for proper oscillator frequency as in step 15.
24.	"	Across antenna terminals with 130Ω in each lead.	79MC (10MC Swp)	77.25MC 81.75MC	5	Vert. Amp. to point (G). Low side to chassis.		Check for response similar to Fig. 6. If markers fall below 80% on any channel retouch A36 and A37 for best compromise on all low band channels. Check oscillator injection voltage at point (G) with VTVM. It should be within limits of 2 to 5.5 volts.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

RCA VICTOR MODELS 21-S-348, G, GU, 21-S-353, G, GU, U, 21-S-354, G, GU, U, 21-S-355, G, GU, U, 21-S-357G, GU, 21-S-359G, GU, 21-S-362G, GU, M, MU, 21-S-367, G, GU, U, 21-S-369G, GU (Ch. KCS83 Series)

ALIGNMENT INSTRUCTIONS (cont)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
25.	Two 130Ω Carbon Resistor	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (G). Low side to chassis.	A17 A31 A32	Check for response similar to Fig. 6. If markers fall below 80% retouch A17, A31, and A32 for best compromise on all high band channels. Check oscillator injection voltage at point (G) with VTVM. It should be within limits of 2 to 5.5 volts.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
26.		Connect frequency meter as in step 15.	Not used	Freq. meter to 257MC	13	Not used	A19	Adjust individual channel oscillator slug for audible beat on frequency meter on each channel. Check oscillator injection voltage at point (G) on each channel to verify that the voltage is within limits (2-5.5volts). Continue alignment with step 30.
				251MC	12		A20	
				245MC	11		A21	
				239MC	10		A22	
				233MC	9		A23	
				227MC	8		A24	
				221MC	7		A25	
				129MC	6		A26	
				123MC	5		A27	
				113MC	4		A28	
				107MC	3		A29	
				101MC	2		A30	

KRK29A VHF TUNER ALIGNMENT MODELS 21-S-354U & 21-S-362U, MODELS 21-S-348U THRU 21-S-369GU

The VHF alignment procedure for the KRK29A tuner is identical to alignment procedure for KRK29B tuner. Perform the indicated operations outlined in steps 14 through 26 under "KRK29B tuner alignment. "

KRK27 UHF TUNER ALIGNMENT (MODELS 21-S-354U & 21-S-362U, MODELS 21-S-348U THRU 21-S-369GU)

Ground the IF transformer, whose adjustment is A12, by connecting one end of a clip lead to tuner chassis and inserting the opposite end through the aperature provided on top of the tuner.
If the oscilloscope available does not have a sensitivity of 0.03 volts per inch a suitable amplifier may be used.
Fabricate a test dial with marks scriped on its circumference at 0, 9, and 168 degrees. The dial should be made to fit over the split gear on the tuner shaft for accurate alignment. Locate the 0 degree reference point with the capacitor plates fully meshed. To make certain that the plates are fully meshed, place a 1/16" shim between the stop pin on the tuner and the stop plate on the gear assembly.
Connect the high side of the VHF marker signal generator through a 1000Ω carbon resistor to the rear terminal of the 1N82 crystal holder .
Connect the UHF marker generator loosely to antenna terminals.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
27.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	887.5MC (Use Max. sweep width)	41.25MC 43.5MC 45.75MC 887.5MC	83 (168 degree on tuning dial)	Vert. Amp. (thru pre-amp. if needed) to point (H). Low side to chassis.	A39 A40 A41	Adjust A39 and A40 for maximum amplitude overcoupled response curve, centered at 887.5MC, similar to Fig. 8. Adjust A41 until 43.5MC marker coincides with 887.5MC marker. The 41.25MC and 45.75 MC markers should be symmetrically located on top of response curve as in Fig. 8.
28.	"	"	473.5MC (Use max. sweep width)	41.25MC 43.5MC 45.75MC 473.5MC	14 (9 degree on tuning dial)	"	A42 A43 A44	Adjust A42 and A43 for maximum amplitude overcoupled response curve, centered at 473.5MC, similar to Fig. 9. Adjust A44 until the 43.5MC marker coincides with 473.5MC marker. The 41.25MC and 45.75MC markers should be symmetrically located on top of the response curve as in Fig. 9. If necessary repeat steps 27 and 28 until proper responses are obtained.

29. Tune thru entire UHF range and check tracking. If the 41.25MC and 45.75MC markers fall below 70% on any UHF channel it will be necessary to bend the RF plates to correct the mistracking. The plates may be bent by inserting a knife blade thru the two holes provided on the left side of the tuner. Knife the plates while tuning lower in frequency that tracking above the point of knifing will not be disturbed. A check of the section requiring knifing may be made by touching the plates with the knifing tool while noting the effect on the response curve.
Connect the DC probe of VTVM to point (H). Common to chassis. Tune thru the entire UHF range at the same time noting the reading on the VTVM. Readings between .05 and .4 volt should be obtained. If voltages outside this limit are obtained it indicates low B+ voltage, low or high crystal impedance or an oscillator tube outside allowable limits. If the oscillator tube is replaced steps 27 and 28 should be repeated.

KRK22C TUNER ALIGNMENT

The alignment procedure for the KRK22C tuner is identical to alignment for KRK29B Perform the indicated operations outlined in steps 14 through 26 under "KRK29B" tuner alignment .

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
30.	.001MFD	High side to point (J). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (K) Common to chassis.	A46	Attenuate generator output to maintain 6 volts at VTVM. Adjust for maximum deflection.
31.	"	"	"	"	DC probe to point (L) Common to chassis.	A45	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 30 and 31.
32.	"	"	"	"	DC probe to point (K). Common to chassis.	A47	Attenuate generator output to maintain 6 volts at VTVM. Adjust for maximum deflection.

4.5MC TRAP ALIGNMENT

Short pin 1 (grid) of third video IF amplifier (6CB6) to ground.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
33.	100Ω resistor	High side to point (M). Low side to chassis.	4.5MC (400∿Mod)	Any	Use scope. Vert. amp. thru detector (Fig. 1) to pin 9 (plate) of 6X8 (V7A). Low side to chassis.	A48	Adjust for MINIMUM 400∿ indication on scope.

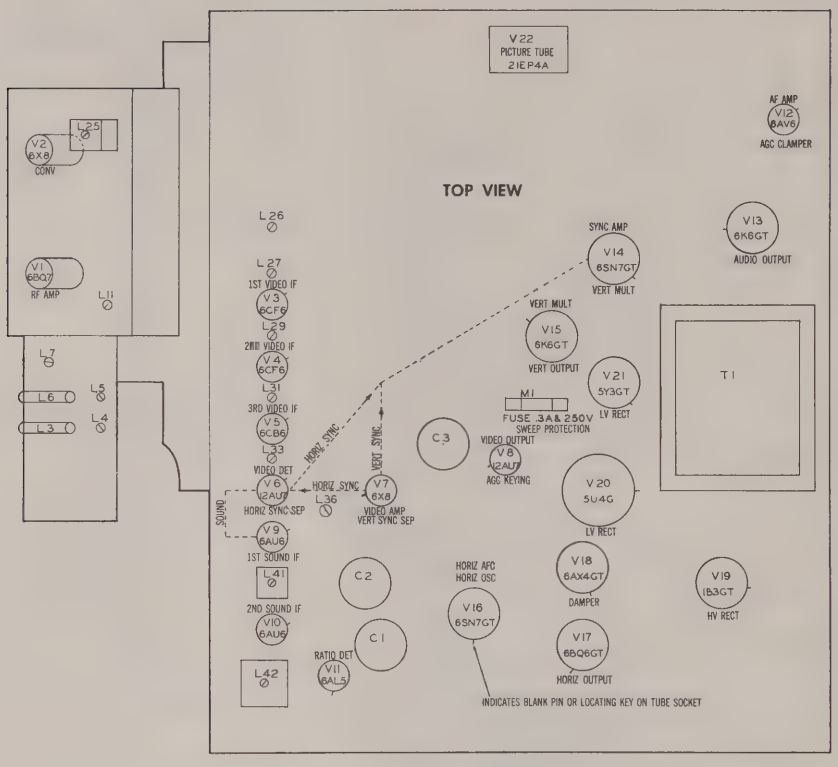
ALTERNATE 4.5MC TRAP ALIGNMENT

Tune in a station and inspect picture for 4.5MC beat interference. If 4.5MC beat interference is evident turn the fine tuning control slightly clockwise to emphasize beat then adjust A48 for MINIMUM 4.5MC beat interference in picture.

FM TRAP ADJUSTMENT

If inteference from a strong FM station is encountered, adjust A49 (on top of antenna matching transformer) for MINIMUM inteference in the picture.

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20, V21**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V7, V8, V22**
Has pic, no sound - **V7, V10, V11, V12, V13**
Overloaded picture - **V8, V12**

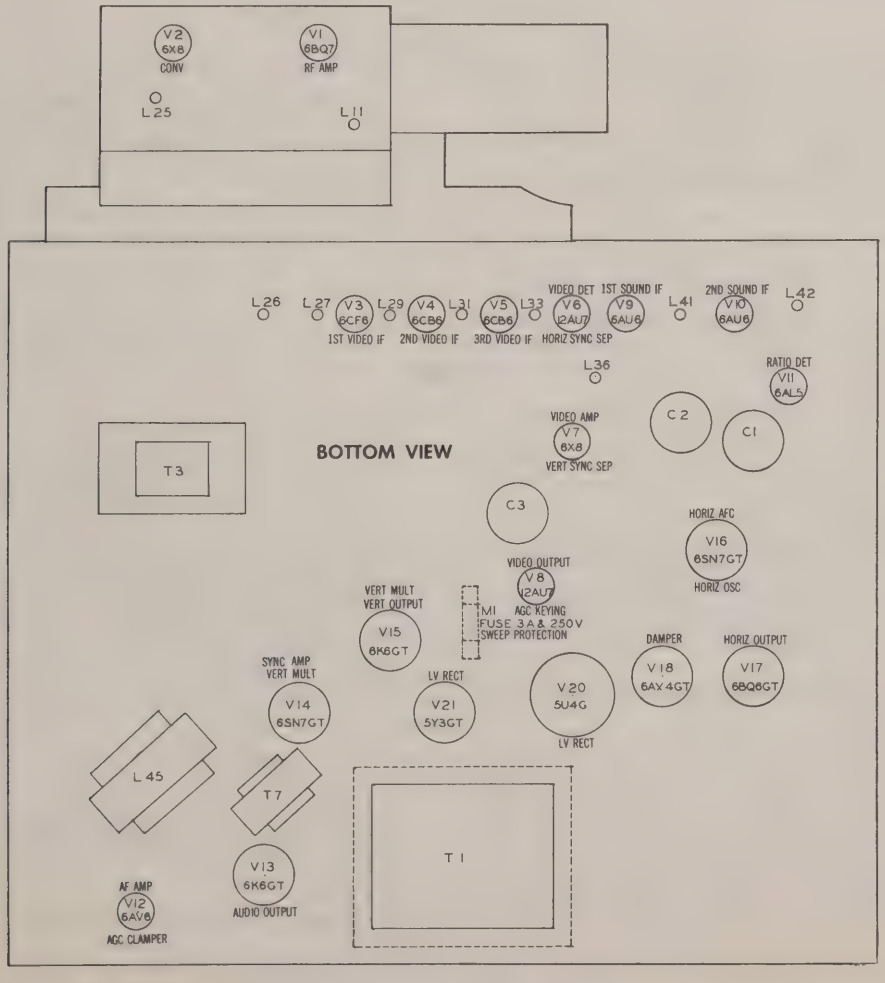
SYNC FAILURE
No vert. sync - **V7, V14**
No horiz. sync - **V6, V14, V16**
No vert. or horiz. sync - **V14**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V22, Fuse (M1)**
No vertical deflection - **V14, V15**
Poor vert. linearity or foldover - **V14, V15**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, V20, V21**
Vert. off freq. - **V7, V14**
Horiz. off freq. - **V6, V14, V16**

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	†1.5KΩ	400KΩ	500KΩ	0Ω	.1Ω	500KΩ	350KΩ	120Ω	0Ω
V 2	6X8	0Ω	100KΩ	†12.5KΩ	0Ω	.1Ω	0Ω	100KΩ	†15.5KΩ	†15.5KΩ
V 3	6CF6	44KΩ	68Ω	0Ω	.1Ω	†4.8KΩ	†4.8KΩ	0Ω		
V 4	6CF6	43KΩ	33Ω	0Ω	.1Ω	†4.8KΩ	†4.8KΩ	0Ω		
V 5	6CB6	.3Ω	180Ω	.1Ω	0Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 6	12AU7	2Meg	3.9KΩ	.3Ω	.1Ω	.1Ω	†6.8KΩ	†30KΩ	400KΩ	0Ω
V 7	6X8	0Ω	2.2Meg	†1.2Meg	.1Ω	0Ω	120Ω	3.9KΩ	†10KΩ	†22KΩ
V 8	12AU7	250KΩ	4.5Meg	†4.3KΩ	.1Ω	.1Ω	†7.5KΩ	470KΩ	11KΩ	0Ω
V 9	6AU6	8.5Ω	0Ω	0Ω	.1Ω	†4.3KΩ	†4.3KΩ	82Ω		
V 10	6AU6	120KΩ	0Ω	0Ω	.1Ω	†10KΩ	†5.3KΩ	0Ω		
V 11	6AL5	10KΩ	10KΩ	0Ω	.1Ω	INF	0Ω	INF		
V 12	6AV6	10Meg	0Ω	0Ω	.1Ω	350KΩ	350KΩ	†300KΩ		
V 13	6K6GT	INF	0Ω	†2.2KΩ	†1.8KΩ	470KΩ	INF	.1Ω	560Ω	
V 14	6SN7GT	†1.5Meg	†12.3KΩ	0Ω	1.8Meg	▲1.6Meg	0Ω	.1Ω	0Ω	
V 15	6K6GT	INF	.1Ω	†525Ω	†40Ω	1.8Meg	INF	0Ω	0Ω	
V 16	6SN7GT	1.5Meg	†45KΩ	410KΩ	480KΩ	†47KΩ	0Ω	.1Ω	0Ω	
V 17	6BQ6GT	INF	.1Ω	INF	†6.8KΩ	1Meg	2.2Meg	0Ω	180Ω	TOP CAP ▲8Ω
V 18	6AX4GT	INF	INF	1Meg	INF	†70Ω	INF	0Ω	.1Ω	
V 19	1B3GT		PIN	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲380Ω
V 20	5U4G	INF	60KΩ	INF	13Ω	INF	13Ω	INF	60KΩ	
V 21	5Y3GT	INF	60 KΩ	INF	13Ω	INF	13Ω	INF	60KΩ	
V 22	21EP4A	0Ω	470KΩ	PIN 10 ▲325KΩ	PIN 11 170KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 8 OF V21
▲ MEASURED FROM PIN 3 OF V18



TUBE PLACEMENT CHART

SET 242 FOLDER 8

PROPERTY OF RCA SERVICE COMPANY
3324 WEST 11TH
DENVER, COLORADO

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICINET SWEEP

Check by substitution V16, V17, V18, V20 and V21. Check adjustments B3, B4 and B5. Check waveform W16.

If Satisfactory	If Unsatisfactory
Check C116, C119, C120, C117, R119, T2, T4A and other associated components.	Check R114, R116, C115 and other associated circuit components.

DRIVE LINES

Check adjustment B3. Check by substitution V16, V17 and V18. Check C114, C115, C119, C120, C123, T2, T4A and other associated circuit components for failure or change of value.

COMPRESSED LEFT SIDE

Check by substitution V16, V17 and V18. Check adjustments B3, B4 and B5. Check components associated with the horizontal output and damper stages especially T2 and T4A.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check V17 and V18 for internal arcing. Check T2, T4A, T5 and T6 for internal arcing.

XMAS TREE EFFECT

Substitute V16. Check L43, C111, C110, C115, C114 and other associated components for failure or change of value.

VERTICAL

LOSS OF SWEEP

Check by substitution V14 and V15. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check T3, T4B, and other associated components.	Check C91, C94, C95, C96, C93, R90, R96, R99 and other associated components.

INSUFFICINET SWEEP

Check adjustment of height and vertical linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V14 and V15. Check T3, T4B and other associated components for failure or change of value.

COMPRESSED AT TOP

Check by substitution V14 and V15. Check R94, R96, R99, R92, R93, R89, C94, C95, C96, C93 and other associated circuit components.

FOLDS

Check by substitution V14 and V15. Check components associated with V14B and V15 including T3 and T4B.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V6, V7, V8 and V14. Check coupling capacitors, plate load resistors, and grid resistors associated with these stages.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V7 and V14. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check components associated with V14B.	Check vertical integrator network and other associated components. Check video IF stages for overloading.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V6 and V16. Check associated components especially L43, R111, R114, C110, C115 and C103.

HORIZONTAL BENDING

Check by substitution V16 and V17. Check the horizontal AFC filter network for component failure or change of value.

VIDEO

LOSS OF VIDEO

Check by substitution V7 and V8. Check components associated with V7A and V8A for failure or change of value. Check contrast control and picture tube.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best picture and sound. Check adjustment A48. Check video IF alignment.

POOR CONTRAST

Check by substitution V6, V7 and V8. Check contrast control, picture tube and other associated circuit components.

NEGATIVE PICTURE

Check adjustment of the AGC control. Check by substitution V8, V7, V6, V4, V3 and V1. Check AGC network. Check components associated with the tuner and IF strip. Check picture tube and other associated components.

SMEAR

Check by substitution V6, V7 and V8. Check peaking coils, plate load resistors, grid load resistors, contrast control, coupling capacitors and other components associated with V6A, V7A and V8A. Check picture tube.

WIDE BLACK BAR ACROSS PICTURE

Check V1, V3, V4, V5, V7 and V8 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10, V11, V12 and V13. Check stages V12 and V13 using audio signal generator. Apply audio signal across R69.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alginment and circuit components.	Check components associated with V12 and V13 especially C78 and T7.

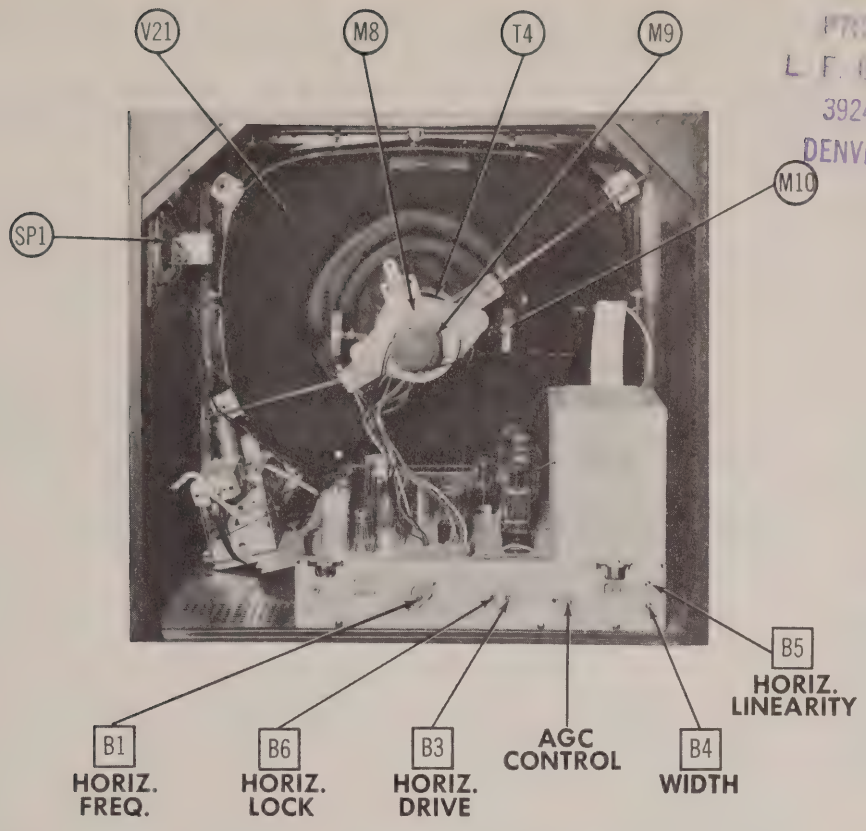
BUZZ

Adjust tuner fine tuning for best picture and sound. Adjust A45 for minimum buzz. If still unsatisfactory, substitute V11 and realign ratio detector and audio IF stages. Check C67, C71 and C70.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

3924 MEADE ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL FREQUENCY ADJUSTMENT

Turn the set on and tune in a TV station, preferably a test pattern. If the picture cannot be synchronized horizontally with the horizontal hold control, adjust the horizontal frequency slug (B1) until the picture synchronizes. If picture still will not synchronize, adjust the horizontal waveform slug (B2) several turns out of the coil and readjust B1 to synchronize the picture. If picture width or linearity is incorrect, adjust the horizontal drive trimmer (B3) and the width control slug (B4) and the horizontal linearity slug (B5) for proper results.

HORIZONTAL WAVEFORM ADJUSTMENT

The horizontal waveform adjustment is made at the factory and normally will require no adjustment. B1 and B2 are adjusted simultaneously while watching the picture. Set the horizontal hold control fully clockwise. Turn B1 until the picture falls out of sync and 3 or 4 diagonal bars sloping down to the right appears on the screen.
Turn B2 clockwise, at the same time adjusting B1 to maintain 3 or 4 diagonal bars on the screen.
Continue adjusting B1 and B2 in that manner until the oscillator begins to motorboat, then adjust B2 counter clockwise until the motorboating stops. To check adjustment turn B1 until picture synchronizes, then reverse the direction until picture falls out of sync with the diagonal bars sloping down to the right.
Continue to turn B1 in the same direction. No additional bars should appear on the screen. Instead the horizontal oscillator should start to motorboar.
Retouch B2 until this condition is obtained.
To observe the horizontal waveform connect the low capacity probe of an oscilloscope to terminal "C" of L43. Turn the horizontal hold control 1/4 turn from clockwise so that picture is in sync. The waveform on the scope should appear as in Fig. 12.
Adjust B2 for broad and narrow peaks of equal height as in Fig. 12. If necessary, while adjusting B2, keep the picture in sync with the horizontal hold control. Remove the oscillosope.

HORIZONTAL LOCKING RANGE ADJUSTMENT

With the horizontal hold control infull counter clockwise position, momentarily interrupt the signal by switching off channel and back again. If picture remains in sync turn B1 slightly and again switch off channel, repeating procedure until picture loses sync with diagonal bars sloping down to the left. Slowly turn the horizontal hold control clockwise and note the least number of bars obtained just before the picture pulls into sync. If the number is more than three adjust the horizontal locking trimmer (B6) slightly clockwise. If the number is less than two adjust B6 slightly counter clockwise. Recheck as above for the least number of bars and readjust B6 if necessary, until two or three bars are present. Turn the horizontal hold control fully clockwise and adjust B1 until the diagonal bar sloping down to the right appears on the screen, then reverse direction of adjustment of B1 until the diagonal bar just disappears, leaving the picture in synchronization.

AGC CONTROL ADJUSTMENT

Connect the vertical amplifier of oscilloscope to pin 9 (plate of the video amplifier (6X8). Connect low side to chassis. Tune in a strong station and adjust scope to observe video waveform. Rotate the AGC control clockwise until sync pulse tips begin to be compressed, then counter clockwise until the compression disappears.

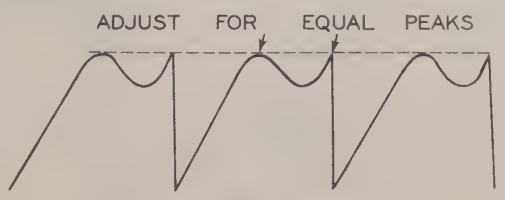
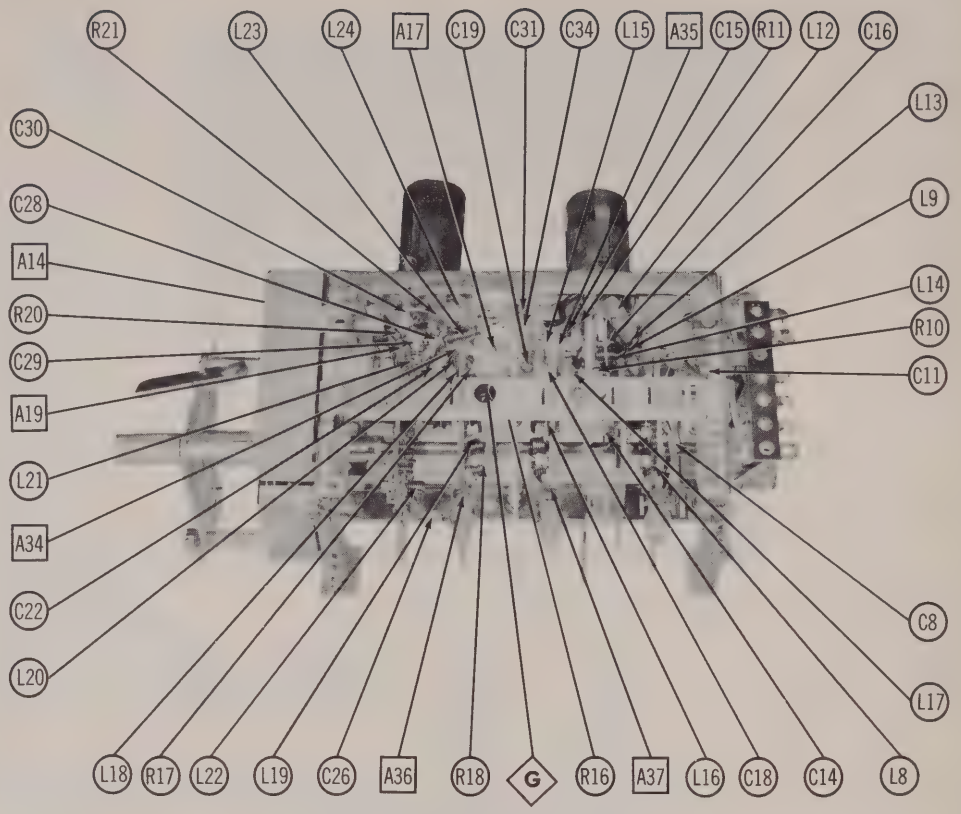
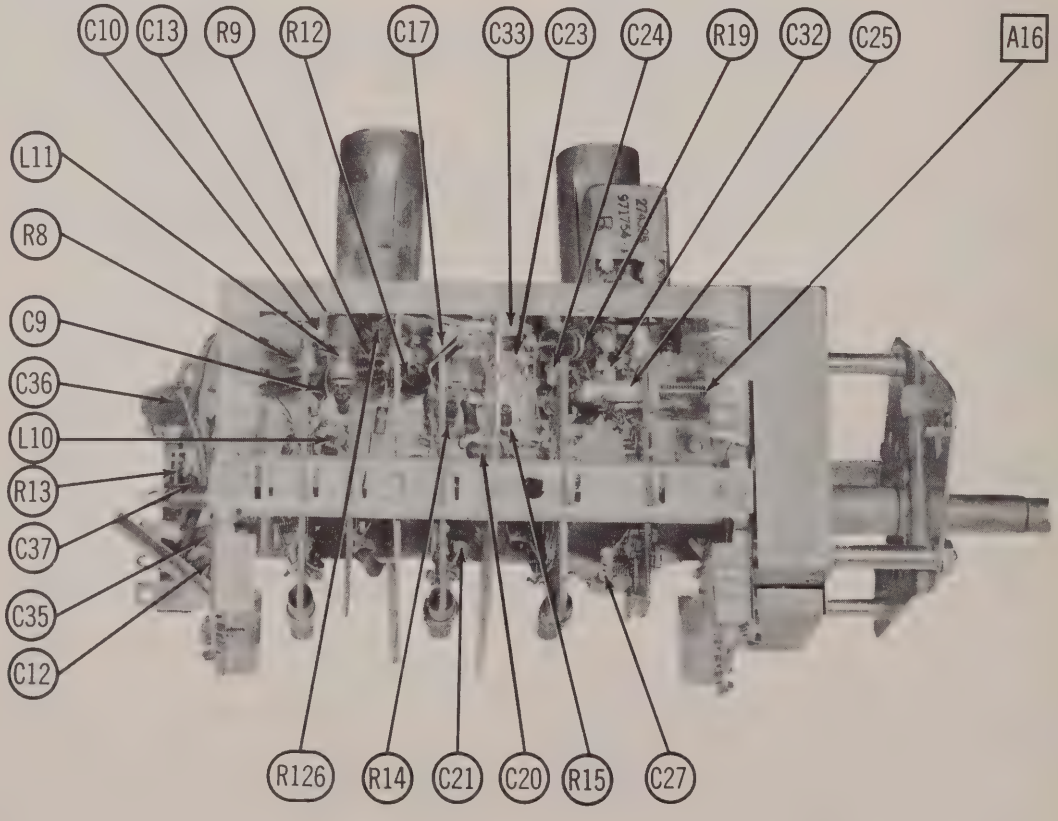


FIG. 12



VHF TUNER-RIGHT SIDE



VHF TUNER-LEFT SIDE

PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: RCA Victor PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF-Amplifier	6BQ7A	6BQ7A	9AJ	
V2	Converter	6X8	6X8	9AK	
V3	1st Video IF Amp.	6CF6	6CF6	7CM	
V4	2nd Video IF Amp.	6CF6	6CF6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Detector-Horiz. -Sync-Sep.	12AU7	12AU7	9A	
V7	Video Amplifier-Vert. Sync Sep.	6X8	6X8	9AK	
V8	Video Output-AGC Keying	12AU7	12AU7	9A	
V9	1st Sound IF Amp.	6AU6	6AU6	7BK	
V10	2nd Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector	6AL5	6AL5	6BT	
V12	AF Amplifier-AGC Clamper	6AV6	6AV6	7BT	
V13	Audio Output	6K6GT	6K6GT	7S	
V14	Sync Amplifier-Vert. Mult.	6SN7GT	6SN7GT	8BD	
V15	Vert. Mult. - Vert. Output	6K6GT	6K6GT	7S	
V16	Horiz. AFC - Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Horiz Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6AX4GT	6AX4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	
V21	LV Rectifier	5Y3GT	5Y3GT	5T	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: RCA Victor PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V22A	21EP4A	21EP4A 21EP4B ①	21EP4A	21EP4A	21EP4A 21EP4B ①	12N 12N	① Aluminized ② Circuit changes necessary
B	21ZP4A	21ZP4A	21ZP4A	21ZP4A	21ZP4A	12N	
C	21AP4	21AP4 ②	21AP4 ②			12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲80	400	77644	AFH2-63		C036		FP444.8	TVL-2673	
B	▲20	400								
C2A	▲100	400	78212	AFH2-91		C152		FP431.4	TVL-3672	
B	▲20	50								
C3A	■10	350	78213	AFH3-136		C153		FP231	TVL-3637	
B	▲5	350						TC47		
C	30	50								
C4	18		54207	SI18NP0	TCZ-18	TZ12	NP0K-180		5TCC-Q18	
C5	5		93056	SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	
C6	27		70935	SI27NP0	TCZ-27	TZ16	NP0K-270		5TCC-Q27	
C7	33		76739	SI33NP0	TCZ-33	TZ18	NP0K-330	ZT-5433	5TCC-Q33	
C8	3.3		71504	SI3.3NP0	TCZ-3.3	TZ06	NP0K-3R3	ZT-5533	5TCCB-V33	Note 2
C9	270		75199	SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C10	.8-3				829-3		311-01-0R5			Note 6
C11	1000		77084	EF-001	MFT-1000				503C-D1	
C12	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C13	1000		77252	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C14	270		75199	SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C15	1000		77252	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C16	1000		77252	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	Note 2
C17	1-4				829-4		311-01-10			Note 7
C18	2.2		71502	SI2.2NP0	TCZ-2.2	TZ05	NP0K-2R2		5TCCB-V22	
C19	150		78276	SI150	D6-151	TP36	GP2K-151	UC-5315	5GA-T15	
C20	270		75199	SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C21	2.2		71502	SI2.2NP0	TCZ-2.2	TZ05	NP0K-2R2		5TCCB-V22	Note 2
C22	100		75437	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	Note 2
C23	1000		77084	EF-001	MFT-1000				503C-D1	
C24	.8-3		77151		829-3		311-01-0R5	CT565A		
C25	.8-3		77913		829-3		311-01-0R5	CT565A		
C26	.68		71504		TCZ-.68	TZ02	NP0K-R68			
C27	10		77865	SI10NP0	TCZ-10	TZ09	NP0K-100	ZT-541	5TCC-Q1	Note 2
C28	10		78247	SI10NP0	TCZ-10	TZ09	NP0K-100	ZT-541	5TCC-Q1	
C29	10		77865	SI10NP0	TCZ-10	TZ09	NP0K-100	ZT-541	5TCC-Q1	
C30	.8-3		77151		829-3		311-01-0R5	CT565A		
C31	1000		77084	EF-001	MFT-1000				503C-D1	
C32	82			SI82	D6-820	G040	GP1K-820	UC-5482	5GA-Q82	Note 8
C33	1000		77084	EF-001	MFT-1000				503C-D1	
C34	1000		77084	EF-001	MFT-1000				503C-D1	
C35	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C36	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C37	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C38	.22	400	73794	P488-22		CUB4P22		PT4025	4TM-P22	
C39	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C40	15		39044	SI15N750	TCN-15	TN03	N750K-150	NT-5415	5TCU-Q15	
C41	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C42	.47	200	73787	P488-47		CUB2P47		PT405	2TM-P47	
C43	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C44	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C45	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C46	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C47	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C48	1000		77253	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	

(CONT'D ON NEXT PAGE)

PARTS LIST & DESCRIPTION (continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C49A	470		72672	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
B	470			BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C50	.00000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-511	Note 2
C51	470		77393	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	Note 2
C52	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C53	10		33098	S10NP0	TCZ-10	TZ09	NP0K-100	ZT-541	5TCC-Q1	
C54	47			S47NP0	TCZ-47	TZ22	NP0K-470	ZT-5447	5TCC-Q47	
C55	.0039	400	73796			PM6D39				
C56	47		39043	S47	D6-479	TP29	GP1K-470	UC-5447	5GA-Q47	
C57	.047	600	73593	P688-047	DF-503	CUB8547		PT8147	6TM-S47	
C58	.0027	600	73599			PM6D27				Note 3
C59	.1	600	73557	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C60	220	1000	75248	HVD15-00022			1R5KV-221	MCK5322	10GA-T22	
C61	.0022	600	73595	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C62	.001	600	75643	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C63	.001	600	75643	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	Note 2
C64	10000		76981	BPD-2X01	DD3-105	DK082	811-01	DC-521	5HK-321	
C65A	10000						811-01	DC-521	5HK-321	
B	10000		73960	BPD-01	DD-103	K082	811-01	DC-521	5HK-511	
C66	10000		73960	BPD-01	DD-103	K082	811-01	DC-521	5HK-511	
C67	.47	200	73787	P288-47		CUB2P47		PT405	2TM-P47	
C68	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	Note 2
C69	470		77293	BPD-00047	D6-471	K060	821-471	UC-5347	5GA-T47	
C70	470	500	39644	1469-0005		SR5T47		MCB245	MS-35	
C71	470	500	39644	1469-0005		SR5T47		MCB245	MS-35	
C72	.0022	600	73595	P688-0022	D6-222	CUB6D22	GP2-333-222	PT621	6TM-D22	
C73	.0047	400	73920	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C74	.033	200	73552	P288-033		PM4S33		PT4133		
C75	.01	200	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT401	4TM-S1	
C76	.0027	600	73599	S2700	D6-272	TP59	GP2-333-272		5HK-D27	Note 2
C77	270		47817	S270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	Note 5
C78	.01	400	73561	P488-01	D6-103	CUB4S1	GP2-333-103	PT4U	4TM-S1	
C79	.0027	1000	73818			PM1DD27				
C80	330	500	39040			SR5T33		MCB245	MS-35	
C81	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C82	.033	600	73552	P688-033		PM6S33		PT6133		
C83	180		71823							
C84	.0039	400	73796			R5D39				
C85	270	1000	76579							
C86	.0082	400	73808			PM6D82				
C87	.0027	600	73599			PM6D27				
C88	.0033	600		P688-0033	D6-332	CUB6D33	GP2-333-332	PT6233	6TM-D33	Note 1
C89	.1	600	73551	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C90	.01	600	73585							
C91	.047	600	73592	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	Note 4
C92	.068	200	73792							
C93	.022	600	73798	P688-022	DF-203	CUB6S22		PT6122	6TM-S22	
C94	.0027	600	73599							
C95	.015	400	73797							
C96	.022	600	73798	P688-022	DF-203	CUB6S22		PT6122	6TM-S22	
C97	.001	1000	75643	P1088-001		CUB6D1		PT1821	MB-D1	
C98	.047	600	73592	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C99	.0047	400	73920	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C100	.1	600	73551	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C101	220	500	39636			22R1T22				
C102	82	1000	76474							
C103	.047	600	73553	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C104	.47	200	73787	P288-47		CUB2P47		PT405	2TM-P47	
C105	.022	200	73562	P488-022	DF-203	CUB4S22		PT4122	4TM-S22	
C106	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C107	.001	600	75643	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C108	68	1000	76475	1469-00007		5R5Q68			MS-47	
C109	12		33380	S1U2	D6-120	TP10	GP1K-120	UC-5142	5GA-Q12	
C110	330	1000	76476							
C111	.01	600	73594							
C112	.022	1000	73810	P1088-022		CUB1S22		PT6122	MB-S22	
C113	.1	400	73557	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C114	.0012	600	76995			PM6D12				
C115	.00068	600	76479							
C116	.1	600	73557	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C117	.27	200	73786			PM4P27				
C118	270	1000	76579							
C119	.039	1000	73813			PM10S39				
C120	.039	1000	73813			PM10S39				
C121	82	3500	78225							
C122	500	25000	76488		TV8-503	MMU30T5				Note 2
C123	81									Note 3

Note 1. Some Models use .0039MFD in this application (part #78221).
Note 2. Not used in all Models.
Note 3. Some Models use 68MMF in this application.
Note 4. Some Models use .056MFD in this application.
Note 5. Some Models use .001MFD in this application.
Note 6. Some Models use .1-4 MMF in this application.
Note 7. Some Models use .8-3 MMF in this application.
Note 8. Some Models use 1000MMF in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	10KΩ	½	78208	* QJ-504	RTV-643		UF14L	Contrast (Panel)
B	1 Meg	½					UR16-T254 †	Volume tapped at 250K (Rear)
C	Switch						US-26	Attach to R1B
R2A	200KΩ	½	78209	Q11-129	A47-300K-S	B-46	U-43	Brightness
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3A	2.5 Meg	½	78206	Q11-141	A47-3.5Meg-S	AB-86	U-67	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A.
R4A	2.5 Meg	½	78207	Q11-239	A47-2.5Meg-S	AB-83	U-255	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	1.5 Meg	½	78210	Q11-138	A47-1.5Meg-S	AB-75	U-155	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R5A

CONTROLS (cont)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R6A	75KΩ	½	77639	Q11-125	A47-75K-S	AB-35	U-41	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R6A
R7A	500KΩ	½	76975	Q11-133	A47-500K-S	AB-59	Not Req.	AGC
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R7A

* CONC TRIKET EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B17-116 & P1-200 (Panel)
B13-137X & RI-216 (Rear) & SWITCH 76-1.

† Universal replacement (Mallory exact duplicate Part No. UE7758)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA RCA Victor PART No.	IRC PART No.	NOTES
R8	6800Ω	½	503268	BTS-6800	
R9	1200	½	503212	BTS-120	
R10	1000Ω	½	503210	BTS-1000	
R11	1 Meg	½	503510	BTS-1 Meg	
R12	1 Meg	½	503510	BTS-1 Meg	
R13	470Ω	½	503147	BTS-470	
R14	1000Ω	½	503210	BTS-1000	
R15	100KΩ	½	503240	BTS-100K	
R16	100KΩ	½	503410	BTS-100K	
R17	33Ω	½	502033	BTS-33	
R18	3300Ω	½	503233	BTS-3300	
R19	15KΩ	2	523315	BTB-15K	
R20	100KΩ	½	503410	BTS-100K	
R21	12KΩ	2	523312	BTB-12K	
R22	1.5Meg 5%	1	502515	BTS-1.5Meg 5%	
R23	1000Ω	½	503210	BTS-1000	
R24	180K 5%	½	502418	BTS-180K 5%	
R25	15KΩ	½	503315	BTS-15K	
R26	1000Ω	½	503210	BTS-1000	
R27	150KΩ	½	502415	BTS-150K	
R28	68Ω	½	502068	BTS-68	
R29	1000Ω	½	503210	BTS-1000	
R30	56KΩ	½	502356	BTS-56K	
R31	43KΩ 5%	½	502343	BTS-43K 5%	
R32	33Ω 5%	½	502033	BTS-33 5%	
R33	1000Ω	½	503210	BTS-1000	
R34	1.5 Meg	½	502515	BTS-1.5Meg	
R35	3800Ω	7	77671		
R36	56KΩ 5%	½	502356	BTS-56K 5%	Note 3
R37	180Ω	½	502118	BTS-180	
R38	47KΩ	½	503347	BTS-47K Note 3	
R39	12KΩ	½	503312	BTS-12K Note 3	
R40	3900Ω 5%	½	502239	BTS-3900 5%	
R41	120Ω	½	503112	BTS-120	
R42	3.9Meg	½	503539	BTS-3.9Meg	Note 3
R43	12KΩ	2	503312	BTS-12K	
R44	18KΩ	2	523318	BTB-18K	
R45	560Ω	½	503256	BTS-5600	
R46	470KΩ	½	503447	BTS-470K	
R47	180Ω	½	503118	BTS-180	Note 3
R48	1500Ω	1	503215	BTA-1500	
R49	7500Ω 5%	1	512275	BTA-7500 5%	
R50	470KΩ	½	503447	BTS-470K	
R51	220KΩ	½	503422	BTS-220K	
R52	150KΩ	½	503415	BTS-150K	Note 1
R53	3.9 Meg	½	503539	BTS-3.9Meg	
R54	470KΩ	½	503447	BTS-470K	
R55	390KΩ	½	503439	BTS-390K	
R56	47KΩ	½	513347	BTA-47K	
R57	68KΩ	½	503368	BTS-68K	
R58	82Ω	½	503082	BTS-82	
R59	1000Ω	1	513210	BTA-1000	
R60	3300Ω	7	77670		
R61	470Ω	½	503447	BTS-470	
R62	1000Ω	½	503210	BTS-1000	
R63	10KΩ	½	523310	BTB-10K	
R64	47Ω	½	503047	BTS-47	
R65	39KΩ	½	503339	BTS-390K	
R66	10KΩ 5%	½	502310	BTS-10K 5%	
R67	20KΩ 5%	½	502310	BTS-10K 5%	
R68	12KΩ	½	503312	BTS-12K	
R69	10 Meg	½	503810	BTS-10 Meg	
R70	500KΩ 5%	1		BTA-500K 5%	Note 2
R71	470KΩ	½	503447	BTS-470K	
R72	560Ω	1	513156	BTA 560	
R73	1600Ω	2	523218	BTB-1600	
R74	10KΩ	½	503310	BTS-10K	
R75	680KΩ	½	503468	BTS-680K	
R76	6800Ω	½		BTS-6800	Note 4
R77	68KΩ	½	503368	BTS-68K	
R78	18KΩ	½	503318	BTS-18K	
R79	270KΩ	½	503427	BTS-270K	
R80	2.2Meg	½	503522	BTS-2.2Meg	
R81	39KΩ	½	503339	BTS-39K	
R82	1.2Meg	½	503512	BTS-1.2Meg	
R83	47KΩ	½	503347	BTS-47K	
R84	4700Ω	1	503247	BTA-4700	
R85	33000Ω 5%	1		36"13 BTS-330 5%	
R86	22KΩ	½	503322	BTS-22K	
R87	18KΩ	½	503318	BTS-18K	
R88	18KΩ	½	503318	BTS-18K	
R89	22KΩ	½	503322	BTS-22K	
R90	470KΩ	½	503447	BTS-470K	
R91	270KΩ	½	503427	BTS-270K	
R92	18KΩ 5%	½	502318	BTS-18K 5%	
R93	390KΩ	½	503439	BTS-390K	
R94	33KΩ 5%	½	502333	BTS-33K 5%	
R95	820KΩ	½	503282	BTS-8200	
R96	470KΩ	½	503447	BTS-470K	
R97	620KΩ 5%	½	502482	BTS-620K 5%	
R98	470KΩ 5%	½	502447	BTS-470K 5% Note 6	
R99	22KΩ 5%	½	502322	BTS-22K 5%	
R100	3300Ω	½	503233	BTS-3300	
R101	15KΩ	½	503315	BTS-15K	
R102	22KΩ	½	503222	BTS-22K	
R103	68KΩ	½	503368	BTS-68K	
R104	150KΩ	½	503415	BTS-150K	
R105	330KΩ	½	503433	BTS-330K	
R106	820KΩ	½	503482	BTS-820K	
R107	330KΩ	½	503433	BTS-330K	
R108	82KΩ	½	503382	BTS-82K	
R109	150KΩ 5%	1	512415	BTA-150K 5%	
R110	3900Ω	½	503239	BTS-3900	
R111	1.8Meg 5%	1	512518	BTA-1.8Meg 5%	
R112	18KΩ	½	503318	BTS-18K	
R113	820KΩ 5%	½	502482	BTS-820K 5%	
R114	47KΩ	½	513347	BTA-47K 5%	
R115	2.2Meg	½	503522	BTS-2.2Meg	Note 3
R116	1 Meg	½	503510	BTS-1 Meg	
R117	47Ω	2	503047	BTS-47	
R118	180Ω	2	77639		
R119	6800Ω	2	523268	BTB-6800	
R120	56KΩ	½	503356	BTS-56K	
R121	82Ω	½	76383		
R122	1000Ω	½	503210	BTS-1000	
R123	560Ω	½		BTS-560	
R124	560Ω	½		BTS-560	
R125	100KΩ	½		BTA-100K	

Note 1. Some Models may use a 270KΩ resistor in this application.
Note 2. Some models may use a 330KΩ resistor in this application.
Note 3. Not used in all models.
Note 4. Some models may use a 5600Ω resistor in this application.
Note 5. Some models may use an 820Ω resistor in this application.
Note 6. Some Models may use a 390KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Holldorson PART No.	Thordorson PART No.
T1	117VAC ②1.9A	550VCT .280ADC	5VAC ③5A	78200	P-8167 ①		R-41BC ①			26R00 ①③
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC ③9.5A									

① Parallel and phase 6.3V windings and use as Sec 3.
② Drill new mounting holes.
③ Parallel and phase 6 6.3V③ 3A windings and use as Sec. 3.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Holldorson PART No.	Thordorson PART No.
T2	Horiz. Output Trans.	78201	*A-8137	*HV6-9	*D-19		*FB41	
T3	Vert. Output Trans.	78202	A-8145 ①	A-3038 ①	A-108X		Z1802 ①	T-26B532
T4A	Yoke-Horiz. (12.4MH)	76616 ②	DB-9A	MDF-72	Y-17		DF602	
B	Yoke-Vert. (37MH)	77697 ② ④						
T5	Horiz. Lin. Coil (2-8.5MH)	76442		WC-8	MWC-8 ④	WC-12 ⑤		
T6	Width Coil (1.8-13MH)	76205		WC-8	MWC-8 ④	WC-12 ⑤		

① Drill new mounting holes.
② Connect as auto transformer.
③ Includes the following items: 6 contact male connector (part #75542), C123, R133, R134.
④ Enlarge mounting hole.
⑤ Connected to coded blue and red terminals.
⑥ Alternate deflection yoke for all chassis with printed circuit IF.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Stancor Replacement Connections	Merit Replacement Connections	Triad Replacement Connections	RCA Replacement Connections	Holldorson Replacement Connections	Thordorson Replacement Connections
5	7	9	9		9	
4	4	8	7 & 8		8	
3	7	7 or 5	5		7 or 5	
2	2	2	2		2	
1	1	1	1		1	
Connect Width Coil Across →	2 & 1	2 & 1	2 & 1	2 & 1	2 & 1	
Special Notes →	①	①	①		①	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Holldorson PART No.	Thordorson PART No.	NOTES
T7	6.5KΩ	3.5Ω	76997	A-3878 ①	A-3020	S-5X ①	Z1113 ①	T-26848	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA RCA Victor PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	5"	PM	3.5Ω	77000	ST-105 (Mod. P5-K)	5A07	① Used in Models 21S362M and 21-S362U
B	8	PM	3.5Ω	75023 ①			

COILS (RF-IF)

ITEM No.	USE	DC RES PRI.	DC RES SEC.	REPLACEMENT DATA RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Trans.	.6Ω	.6Ω	73591				See Note 1
L2	Ant. Trans.	.6Ω	.8Ω	73591				
L3	IF Trap	0Ω		76542				
L4	Ant. Shunt Coil	0Ω		76538				
L5	Ant. Shunt Coil	0Ω		76537				
L6	IF Trap	0Ω		76541				
L7	FM Trap	0Ω		76540				Includes core; core Part # 76543
L8	Ant. Coils	0Ω		78398				Includes stator complete with rotor & coils
L9	Ant. Coil	0Ω		77859				
L10	Ant. Coil	0Ω		78401				
L11	UHF IF Input Coil	0Ω		78271				
L12	FU. Choke	0Ω		77206				
L13	IF Trap	.3Ω						
L14	Neutr. Coil	0Ω		76552				
L15	RF Coil	0Ω		77921				Channel 13; core Part # 77914
L16	RF Coils	0Ω		78274				Includes stator complete with rotor, coils, L15, L17, C18, C21, & R14
L17	RF Coil	0Ω						Channel 2
L18	Mixer grid coil	0Ω		77919				Channel 13; core Part # 77914

(CONT'D ON NEXT PAGE)

RCA VICTOR MODELS 21-S-348, G, GU, 21-S-353, G, GU, U, 21-S-354, G, GU, U, 21-S-355, G, GU, U, 21-S-357G, GU, U, 21-S-359G, GU, U, 21-S-362G, GU, M, MU, 21-S-367, G, GU, U, 21-S-369G, GU (Ch. KCS83 Series)

PARTS LIST & DESCRIPTION (continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: RCA Victor PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L19	Mixer grid coils	0Ω		78272				Includes stator complete with rotor, coils, L18, L20, C20, C27, R15, R16, R17 & R18
L20	Mixer grid coil	0Ω						Channel 2
L21	Osc. Coil	0Ω		77915				Channel 13; core Part # 77914
L22	Osc. Coils	0Ω		77911				Includes stator complete with rotor, coils, L21, C26
L23	Fil. Choke	0Ω		76763				
L24	Fil. Choke	0Ω		76763				Note 3
L25	Conv. Plate	.3Ω	.1Ω	78399				Includes 27KΩ resistor
L26	47.25MC Trap	.1Ω		78204	20-1047		6219 †	
L27	1st Video IF	.1Ω	.2Ω	78203	17-4523		6219	
L28	Fil. Choke	0Ω		73477	19-3001	TV-189	4604	1.36 Microhenries
L29	2nd Video IF	.3Ω	.3Ω	76433	17-4523		6219	See Note 2
L30	Fil. Choke	0Ω		73477	19-3001	TV-189	4604	1.36Microhenries
L31	3rd Video IF	.3Ω	.3Ω	76433	17-4523		6219	See Note 2
L32	Fil. Choke	0Ω		73477	19-3001	TV-189	4604	1.36 Microhenries
L33	4th Video IF	.3Ω	.3Ω	76433	17-4523		6219	See Note 2
L34	Series Peaking Coil	5Ω		75253	19-3125		6153	120 Microhenries
L35	Shunt Peaking Coil	8.5Ω		71526	19-3250	TV-185	6181	250 Microhenries
L36	4.5MC Trap	3.3Ω		76983	20-1004	TV-151	1470	RCA Part # includes C55
L37	Series Peaking Coil	7.5Ω		77674	19-3250 *	TV-185 *	6181 *	250 Microhenries; wound on 27KΩ resistor
L38	Shunt Peaking Coil	11Ω		78222	19-3250 ■	TV-185 ■	6181 ■	250 Microhenries; wound on 6.8KΩ resistor
L39	Series Peaking Coil	5Ω		71529	19-3125 ▲	TV-182	6178	120 Microhenries; wound on 22KΩ resistor
L40	Shunt Peaking Coil	12Ω		75252	19-3500	TV-188	6174	500 Microhenries
L41	Sound IF	1.5Ω		76981	17-1071			Includes 22MMF capacitor & 120KΩ resistor
L42	Ratio Det.	10Ω	.3ΩCT	77112	17-1033	TV-110	1468	Tertiary winding=.5Ω
L43	Horiz. Osc.	130Ω		76440	20-1402	TV-162	6183	Pri. tapped ⓐ 95Ω; horiz. waveform winding=40Ω
L44	RF Choke	.72Ω		76640	19-1001		4604	1.5 Microhenries; Part # CL-1

Note 1. Complete antenna matching transformer (Part # 78396); includes L1 & L2.
Note 2. Chassis KCS83PC, KCS83PD, KCS83PJ, KCS83PK, KCS83PL, KCS83PM, use printed circuit type of IF transformers replaceable with one unit. Unit includes L29, L31, & L33.
Note 3. Not used in all models.
† Use one winding only.
* Parallel with 27KΩ resistor.
■ Parallel with 6.8KΩ resistor.
▲ Parallel with 22KΩ resistor.

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA: RCA Victor PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L45	.280ADC	38Ω	1.06 Hy.	77676	C-2326①	C-2996①	C-17X ①	C5037①	F-26C44①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: RCA Victor PART No. FUSE	RCA Victor PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3/10A	78214	78218	312.300 (3AG-3/10A)	357001	AGC 3/10	4405

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: RCA Victor PART No.	SYLVANIA PART No.	FEDERAL PART No.	NOTES
M2	1N82		1N82 or A		UHF Mixer

PARTS LIST & DESCRIPTION (continued)

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M3	Dial Light	11765	#51 (Not used on Model 21-S-348G)
M4	Tuner		KRK29 (VHF only)
M5	Tuner		KRK22C (VHF only)
M6	Tuner		KRK29A/27 (VHF/UHF)
M7	Switch	78211	TV-phono tone (Not used on Model 21-S-348G)
M8	Focus Magnet	76168	Includes centering device
M9	Ion Trap	76141	
M10	Correction Magnet	76633	(2 Used)
B3, B6	Trimmer Cap.	75217	Dual 10-160MMF (Horiz.Drive & horiz. lock)
A9	Trimmer Cap.	78220	5-70MMF (IF input coupling)
	Knob	77699	Brightness - brown
	Knob	77719	Brightness - med. beige
	Knob	77708	Channel Selector (inner)
	Knob	79078	Channel Selector (ebony)- KRK29, KRK29A/27
	Knob	79085	Channel Selector (maroon) KRK29, KRK29A/27
	Knob	77708	Channel Selector KRK29 tuner (inner)
	Knob	79077	Fine tuning - sandtone - KRK29
	Knob	79081	Fine tuning - sandtone - KRK29A/27
	Knob	77707	Fine tuning - brown - KRK29
	Knob	77717	Fine tuning - Med. beige - KRK29
	Knob	77735	TV-Phono tone - brown
	Knob	77736	TV-phono tone - med. beige
	Knob	79080	Picture - sandtone
	Knob	77709	Picture - brown
	Knob	77718	Picture - med. beige
	Knob	79079	Volume - ebony
	Knob	79072	Volume - maroon
	Knob	77710	Volume - inner
	Knob	78343	VHF fine tuning & UHF channel selector - brown
	Knob	78342	VHF fine tuning & UHF channel selector - med.beige
	Safety glass	78329	For metal table models
	Safety glass	78815	Models 21S326G, 67G, 69G
	Safety glass	78314	Models 21S362M & MU

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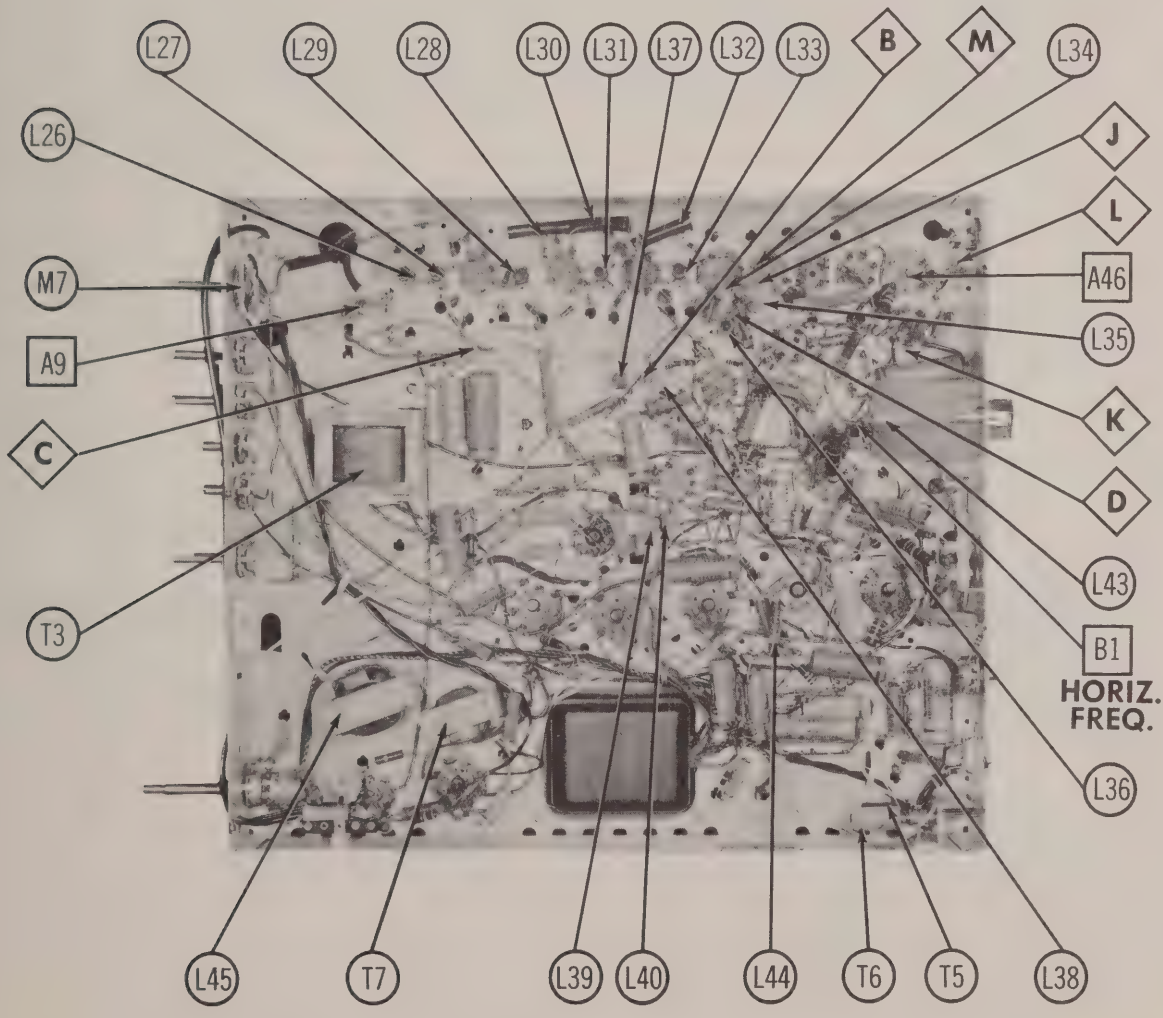
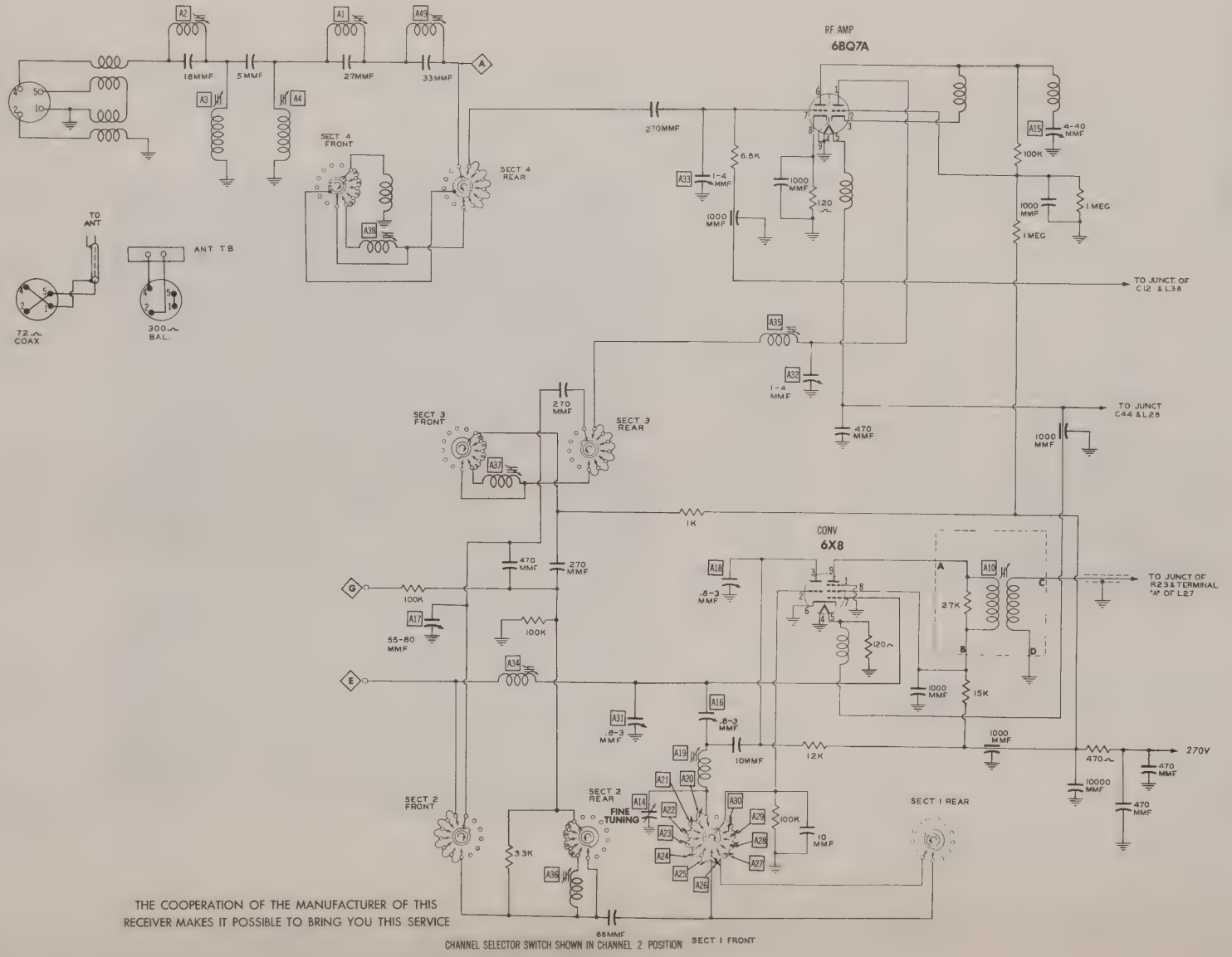


CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION



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ALTERNATE TUNER MODEL NO. KRK-22C USED IN SOME MODELS

ALTERNATE TUNER SCHEMATIC

TROUBLE SHOOTING AIDS (cont)

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POWER

DEAD SET

If filaments fail to light, check AC interlock assembly, switch on volume control and T1. If filaments light, substitute V20 and V21. Check B+ filter and decoupling network components.

SMALL AND/OR DIM PICTURE

Check by substitution V20 and V21. Check B+ filter and decoupling network components.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check waveform W16.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C122, R121, and other associated circuit components.	Check C115, R116 and other associated components.

INSUFFICIENT HIGH VOLATGE

Check by substitution V16, V17, V18, V19, V20 and V21. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by substitution V16, V17, V18, V19, V20 and V21. Check T2, T4A, C122, R121, R119, C116, picture tube and other associated circuit components.

GENERAL

RASTER SOUND NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER PICTURE NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER NO SOUND NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check associated circuit components.

NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

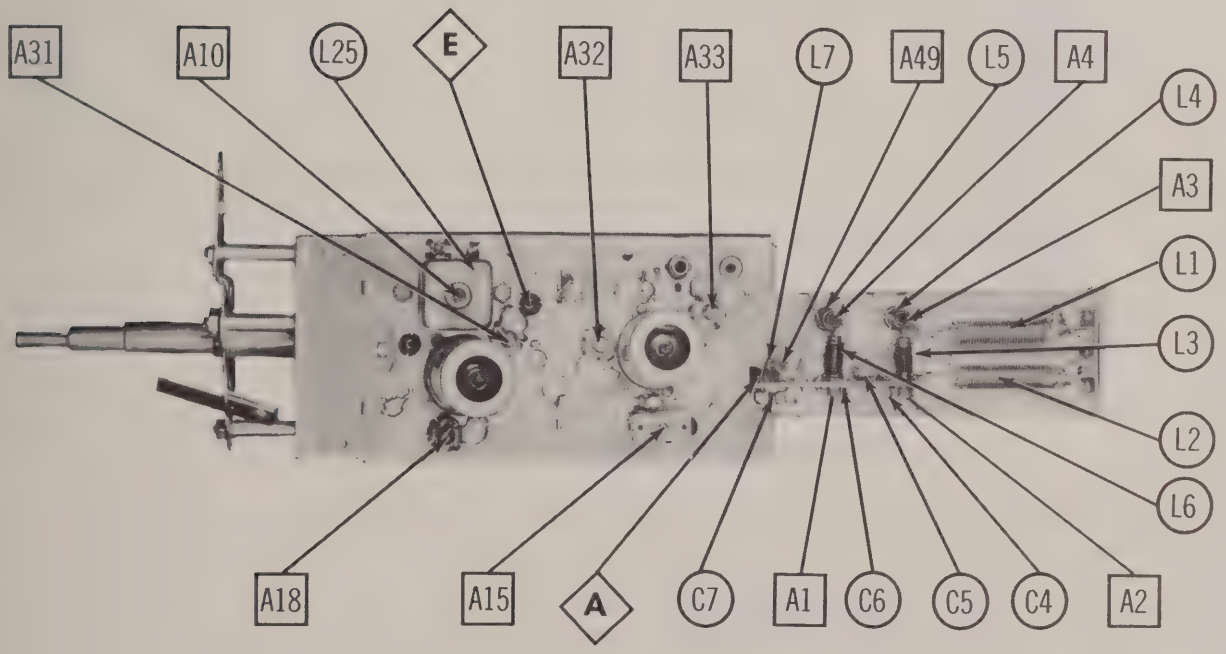
KEYSTONE EFFECT

Check T4, C123, R122, R123 and R124.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



VHF TUNER TOP VIEW

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

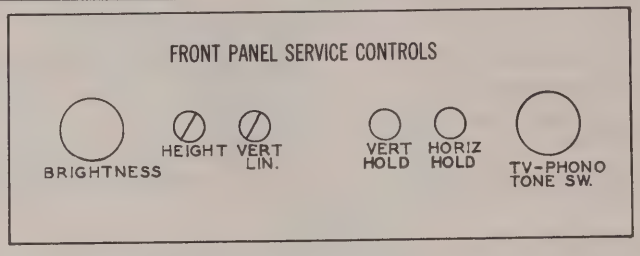
PICTURE TUBE SAFETY GLASS CLEANING

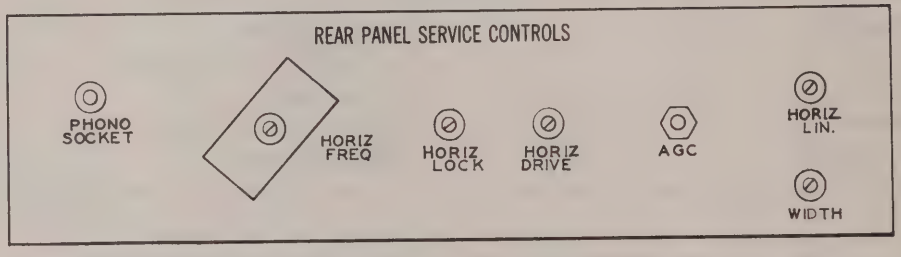
For picture tube safety glass cleaning, it is necessary to remove chassis. (See disassembly instructions).

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal frequency slug (L43) until the picture synchronizes horizontally. If synchronization cannot be obtained by the above adjustment see Horizontal Sweep Circuit Adjustments on page 13.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate Sound IF Detector Buzz, adjust the ratio detector secondary (L42) located on top of chassis. (See tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart) .

CENTERING

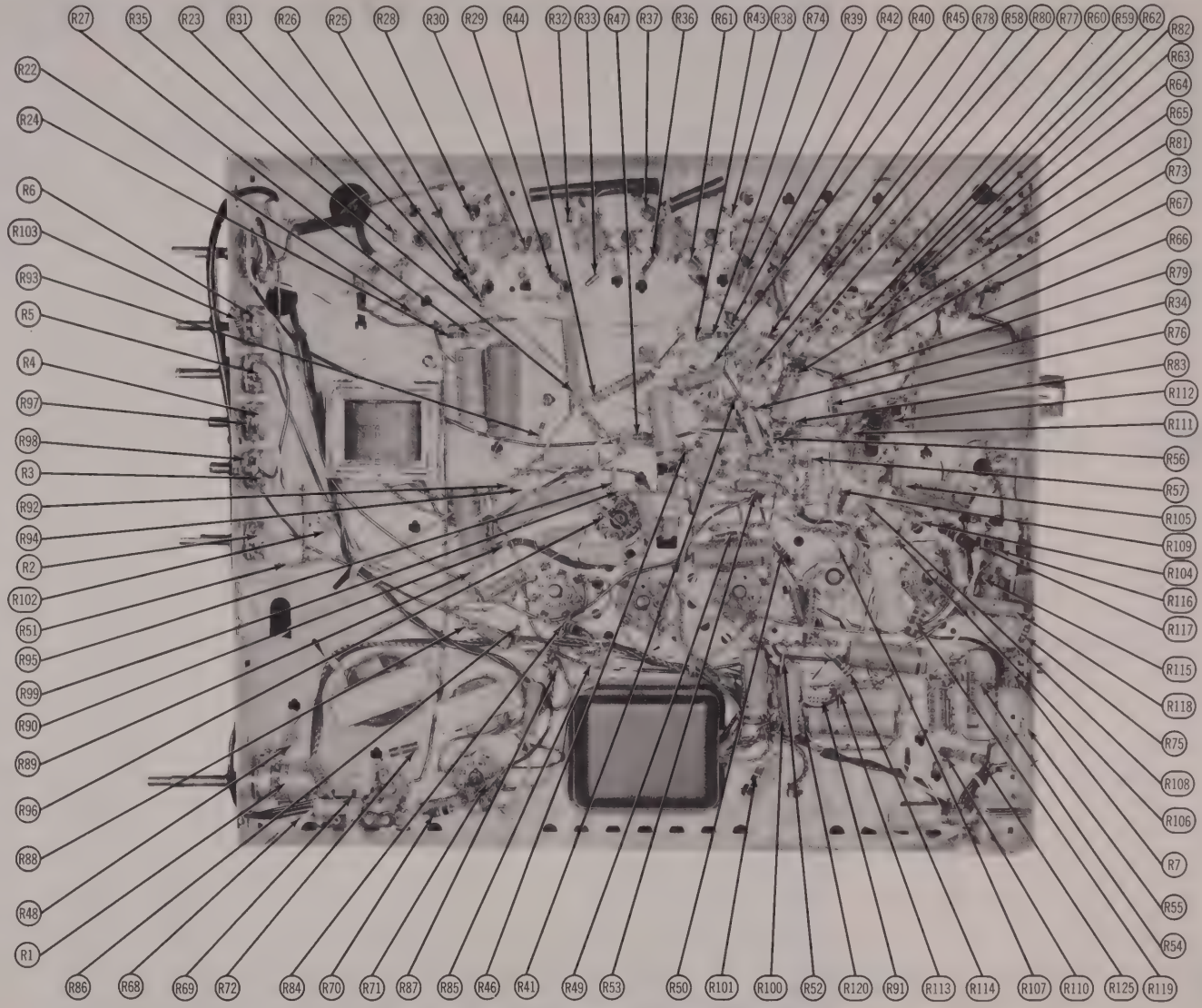
Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

ANTI-PIN CUSHION ADJUSTMENT

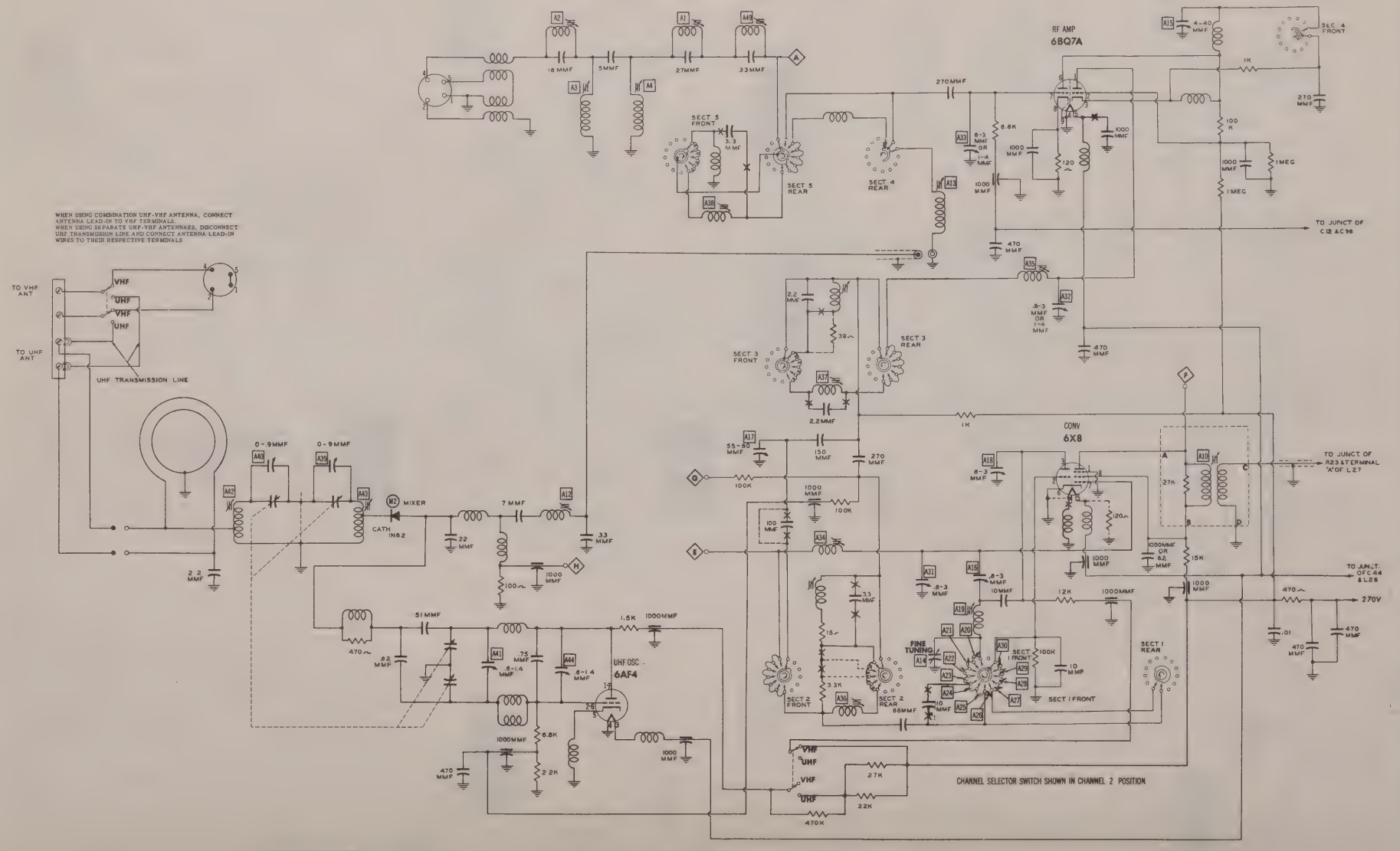
Reduce the picture size so that the sides of the raster are visible, and position the magnets so that all sides are straight lines and the corners are at right angles.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Disconnect transmission lines.
3. Remove 2 metal screws and 2 snap clips. Remove rear cover.
4. Disconnect speaker plugs, yoke plug, CRT socket, and HV plug.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF-VHF TUNER KRK 29A/27 USED ON CHASSIS KCS 83PD, KCS 83A, KCS 83D, & KCS 83PM

ALTERNATE TUNER SCHEMATIC

PHOTOFACT* Folder

SCOTT MODELS 824C, CH, DB, DBH, DM, DMH, 924XW (Ch. 9045)

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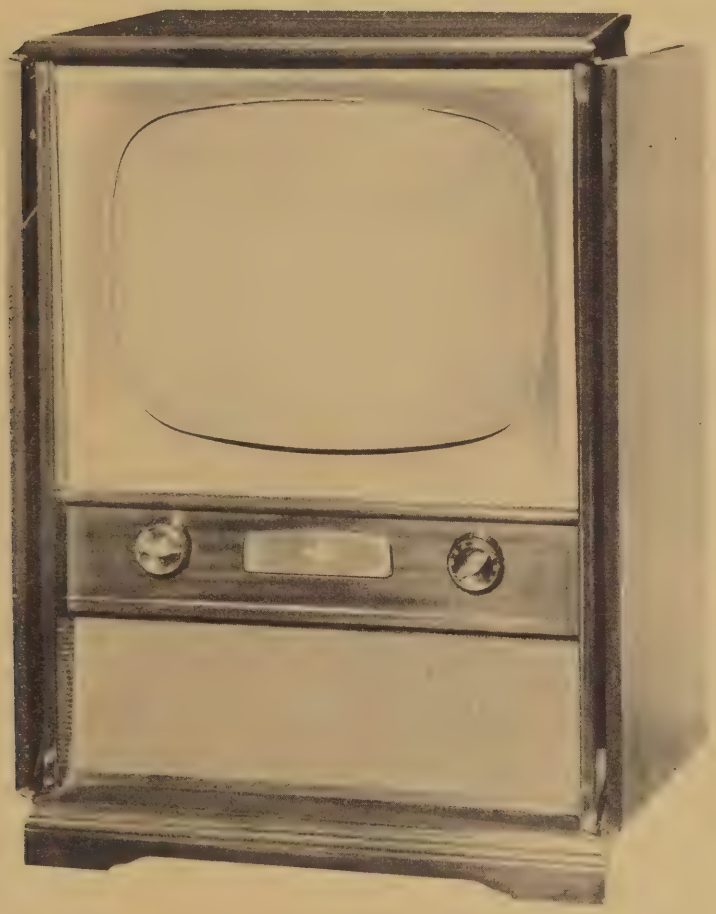

MODEL 924XW

SCOTT MODELS 824C, CH, DB, DBH, DM, DMH, 924XW (Ch. 9045)

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DATE 6-54 SET 242 FOLDER 9

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

SCOTT MODELS 824C, CH, DB, DBH, DM, DMH, 924XW (Ch. 9045)

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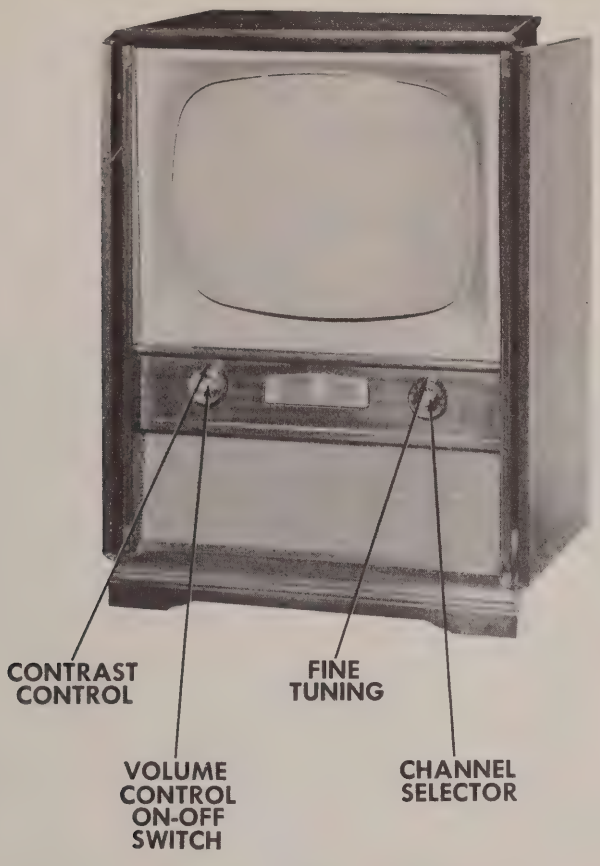
[illegible] MAIN ST.
DENVER, COLORADO



SCOTT MODEL 924XW

TRADE NAME	Scott Models 824C, 824CH, 824DB, 824DBH, 824DM, 824DMH, 924XW (Ch. 9045)
MANUFACTURER	Scott Radio Labs., Inc., Plymouth, Ind.
TYPE SET	Television Receiver
TUBES	Twenty-one
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 2.03 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 26.1MC, Sound IF 21.6MC (Intercarrier)

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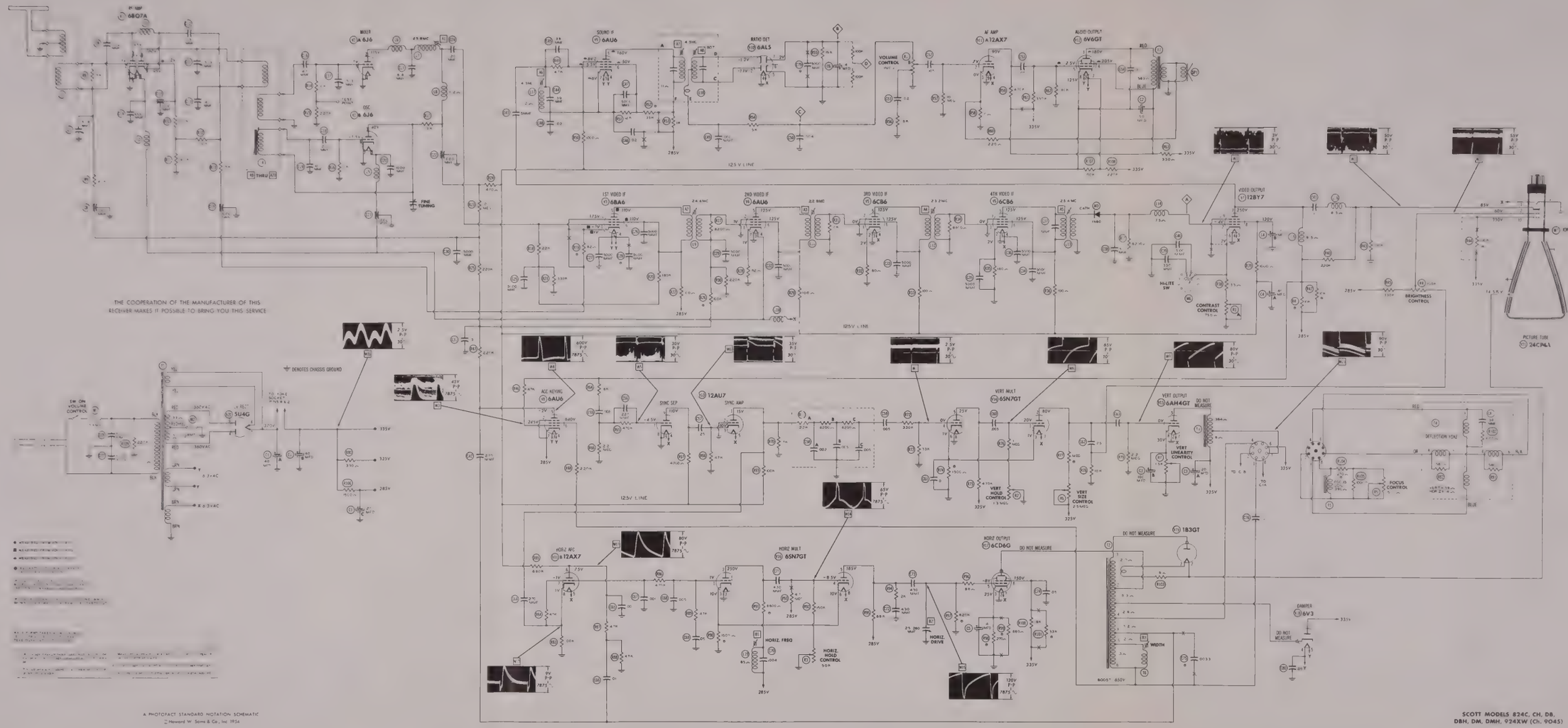
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
125 V LINE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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SCOTT MODELS 824C, CH, DB, DBH, DM, DMH, 924XW (Ch. 9045)

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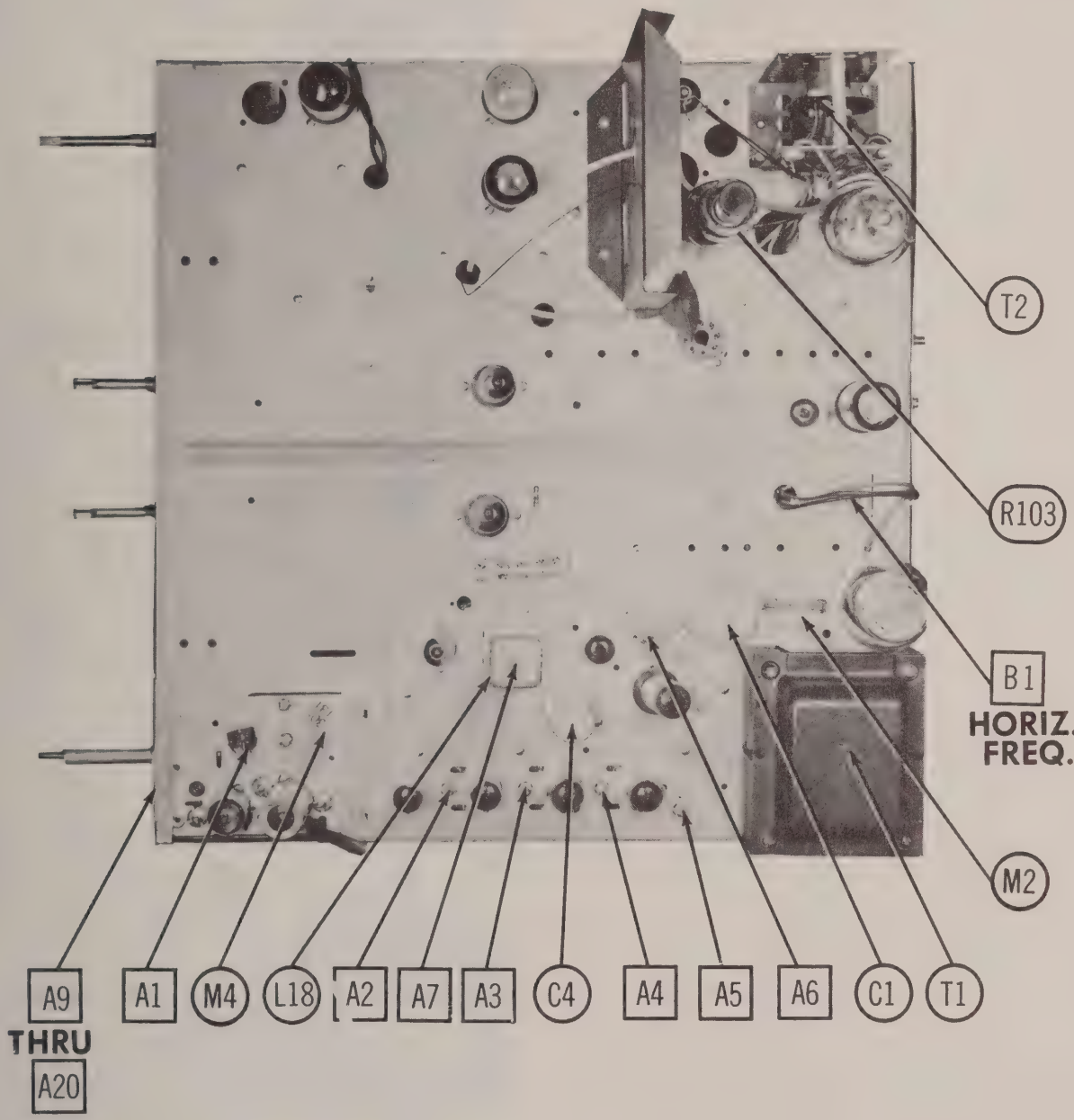

CHASSIS TOP VIEW

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392 [illegible] DE ST.
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CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

MODELS 824C, CH, DB, DBH, DM, DMH, 924XW (Ch. 9045)

SCOTT

TUBE PLACEMENT CHART

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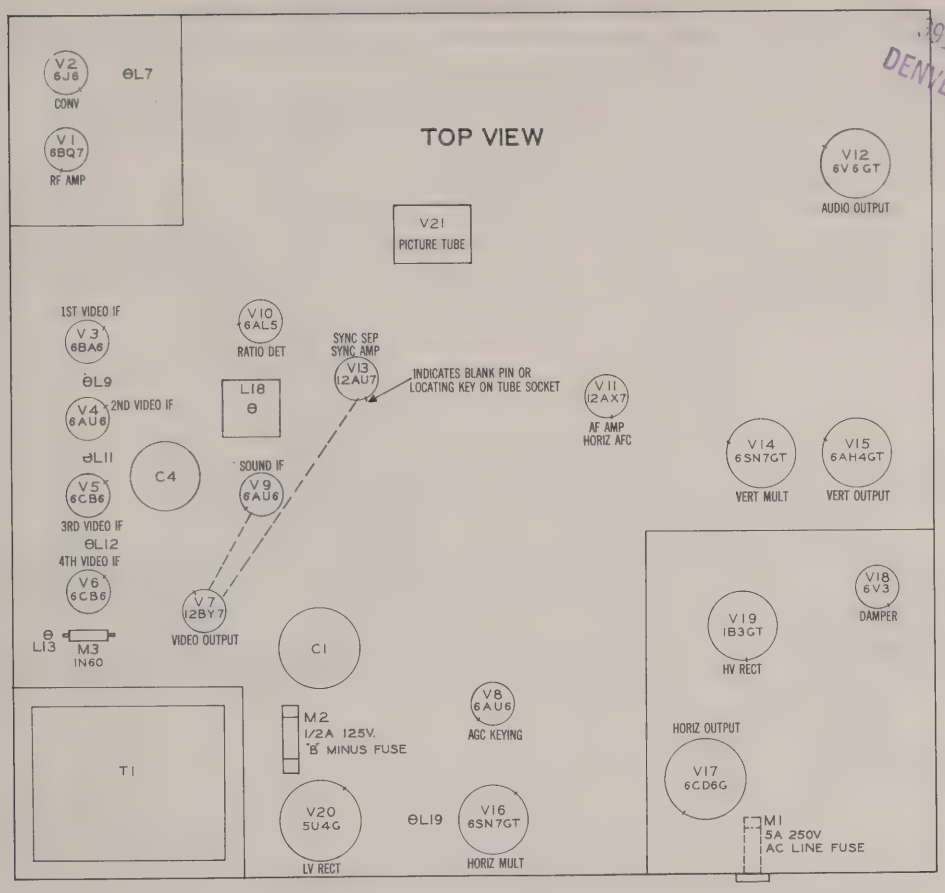

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V20, Fuse (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6, V7, V12**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster -**V7, V21**
Has pic, no sound - **V9, V10, V11, V12**
Overloaded picture - **V8**

SYNC FAILURE
No vert. sync - **V13, V14**
No horiz. sync - **V11, V13, V16**
No vert. or horiz. sync - **V13**

SWEEP FAILURE
No raster, has sound - **V16, V17, V18, V19, V21**
No vertical deflection - **V14, V15**
Poor vert. linearity or foldover - **V14, V15**
Poor horiz. linearity or foldover - **V16, V17, V18**
Narrow picture - **V16, V17, V18, V19, V20**
Vert. off freq. - **V13, V14**
Horiz. off freq. - **V11, V13, V16**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V16) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed.
Earlier models which may be identified by the value of the third video IF amplifier grid resistor (R31) will have slightly different peaking frequencies for A1 thru A5. In the early models the value of R31 will be 6800Ω and A1 thru A5 should be peaked at the following frequencies:

A1 (25.9MC), A2 (24.3MC), A3 (23.1MC), A4 (22.9MC), A5 (25.7MC) .

The overall video IF response curve should be the same for both early and late models (Fig. 1).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter. tube. Low side to chassis.	25.8MC (Unmod)	Any	DC probe thru 2 MegΩ isonating resistor to point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator output to maintain not more than 1 volt at VTVM.
2.	"	"	24.4MC	"	"	A2	"
3.	"	"	22.8MC	"	"	A3	"
4.	"	"	23.2MC	"	"	A4	"
5.	"	"	25.4MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative side of a 3 volt bias battery to the ungrounded side of C31. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	21.6MC 22.7MC 26.1MC	Any	Vert. Amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 1. If necessary, retouch A1 thru A5 to obtain desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B). Common to chassis.	A6, A7	Adjust for maximum deflection. Attenuate generator output to maintain not more than 5 volts at VTVM.
8.	"	"	"	"	DC probe to point (C). Common to point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A6, A7	Disconnect stabilizing capacitor C6. Adjust for curve of maximum amplitude and symmetry similar to Fig. 2.
8.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A8	Reconnect stabilizing capacitor C6. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

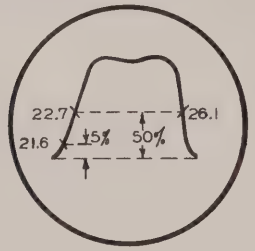

FIG. 1

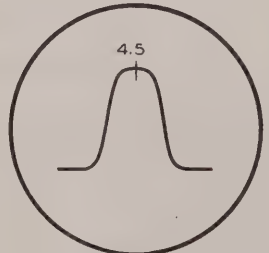

FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

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OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel adjustment screws are reached thru a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point (B). Low side to chassis.	A9	Adjust to place sound marker as shown in Fig. 4. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A15	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A16	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A17	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A18	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A19	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A20	

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER ALIGNMENT

Alignment of the UHF tuner is not recommended in the field. If alignment of this portion of the receiver becomes necessary, the complete UHF tuner unit should be returned to the factory.

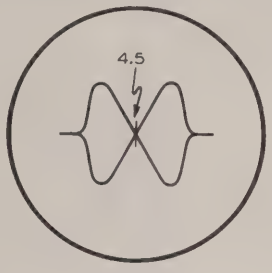


FIG. 3

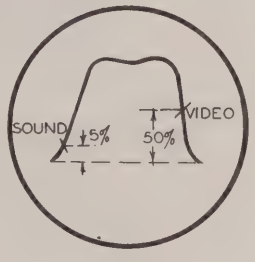
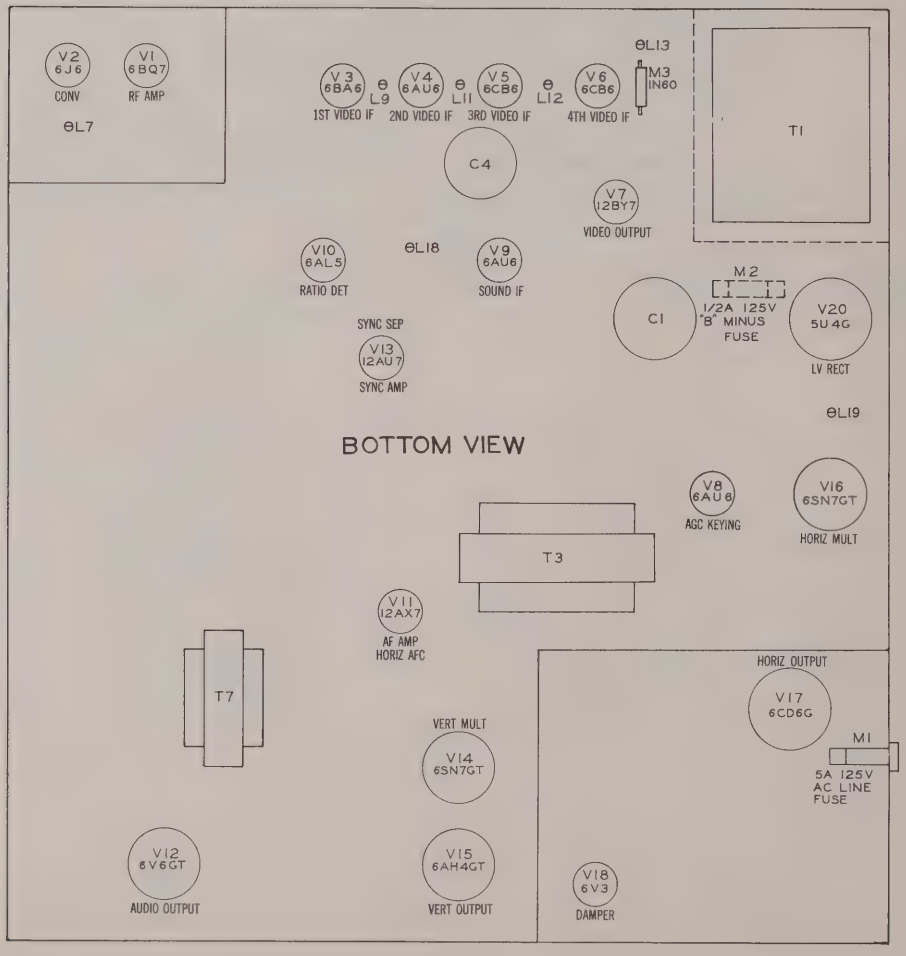


FIG. 4

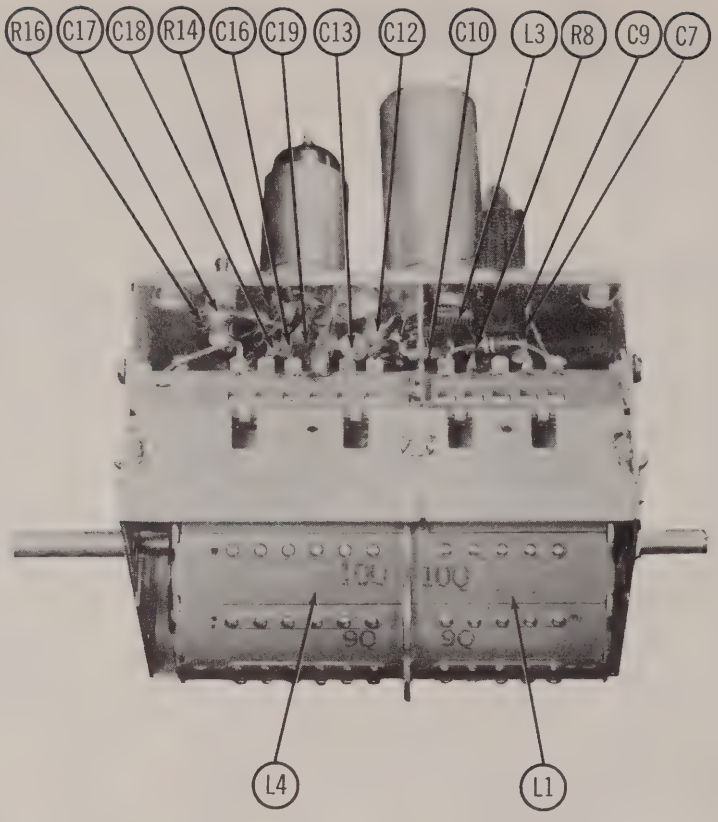
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	INF	600KΩ	0Ω	.1Ω	0Ω	■1.5KΩ	260KΩ	INF	0Ω
V 2	6J6	▲15.5KΩ	▲470Ω	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6BA6	†180KΩ	260KΩ	▲100KΩ	▲100KΩ	†1.8KΩ	†1.8KΩ	■82Ω		
V 4	6AU6	220KΩ	0Ω	0Ω	.1Ω	▲100Ω	▲100Ω	82Ω		
V 5	6CB6	.2Ω	180Ω	0Ω	.1Ω	▲100Ω	▲100Ω	0Ω		
V 6	6CB6	.2Ω	180Ω	0Ω	.1Ω	▲100Ω	▲100Ω	0Ω		
V 7	12BY7	120Ω	8.2KΩ	0Ω	.1Ω	.1Ω	0Ω	†6.7KΩ	▲1KΩ	0Ω
V 8	6AU6	†53KΩ	†1.7KΩ	▲100KΩ	▲100KΩ	540KΩ	▲220KΩ	†1.7KΩ		
V 9	6AU6	▲48KΩ	▲1KΩ	▲100KΩ	▲100KΩ	†2.7KΩ	▲13KΩ	▲1KΩ		
V 10	6AL5	1Meg	1Meg	.1Ω	0Ω	0Ω	INF	15KΩ		
V 11	12AX7	†470KΩ	10Meg	10Ω	.1Ω	.1Ω	95KΩ	150KΩ	100KΩ	0Ω
V 12	6V6GT	INF	▲100KΩ	†875Ω	†500Ω	100KΩ	INF	▲100KΩ	50KΩ	
V 13	12AU7	15KΩ	0Ω	47KΩ	.1Ω	.1Ω	▲4.7KΩ	2.7Meg	0Ω	0Ω
V 14	6SN7GT	1.5Meg	†1.7Meg	1.5KΩ	33KΩ	†470KΩ	1.5KΩ	.1Ω	0Ω	
V 15	6AH4GT	2.2Meg	0Ω	2.2Meg	INF	†850Ω	INF	.1Ω	1KΩ	
V 16	6SN7GT	620KΩ	†8.5KΩ	1.5KΩ	175KΩ	†70KΩ	1.5KΩ	0Ω	.1Ω	
V 17	6CD6G	95KΩ	0Ω	240Ω	47KΩ	820KΩ	INF	.1Ω	†13.5KΩ	TOP CAP ▲8.3Ω
V 18	6V3	INF	†250Ω	INF	▲100KΩ	▲100KΩ	INF	†250Ω	INF	TOP CAP INF
V 19	1B3GT		PINS	1 - 8	HAVE	INF	RESISTANCE			TOP CAP ▲220Ω
V 20	5U4G	INF	55KΩ	INF	37Ω	INF	39Ω	110KΩ	55KΩ	
V 21	24CP4A	0Ω	80KΩ	PIN 10 †100KΩ	PIN 11 70KΩ	PIN 12 .1Ω				

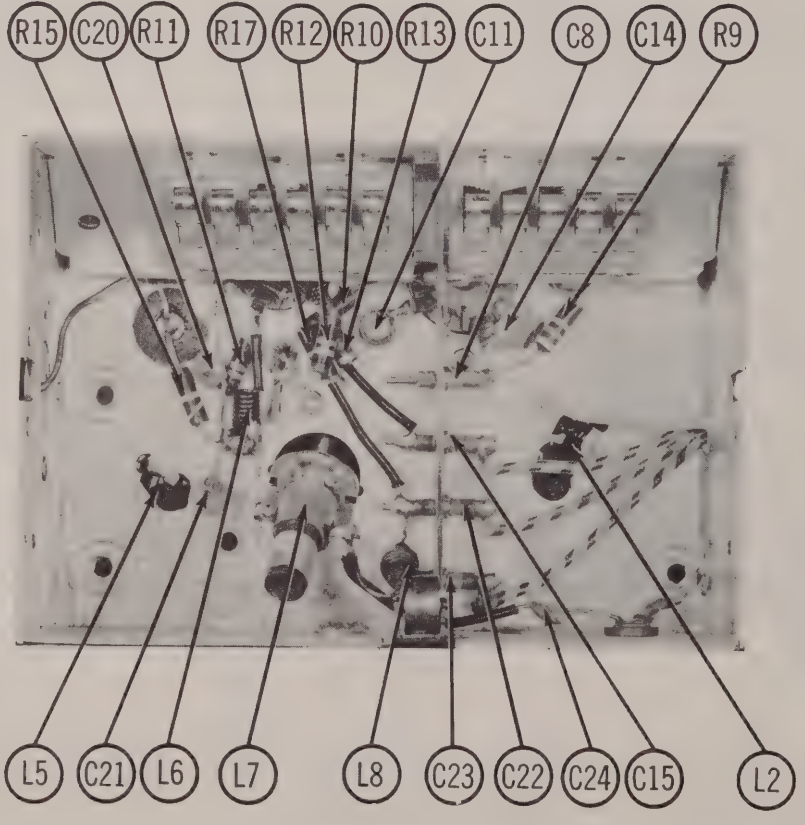
▲ MEASURED FROM TOP CAP OF V18
■ MEASURED FROM PIN 2 OF V3
▲ MEASURED FROM PIN 8 OF V12
† MEASURED FROM PIN 2 OF V20



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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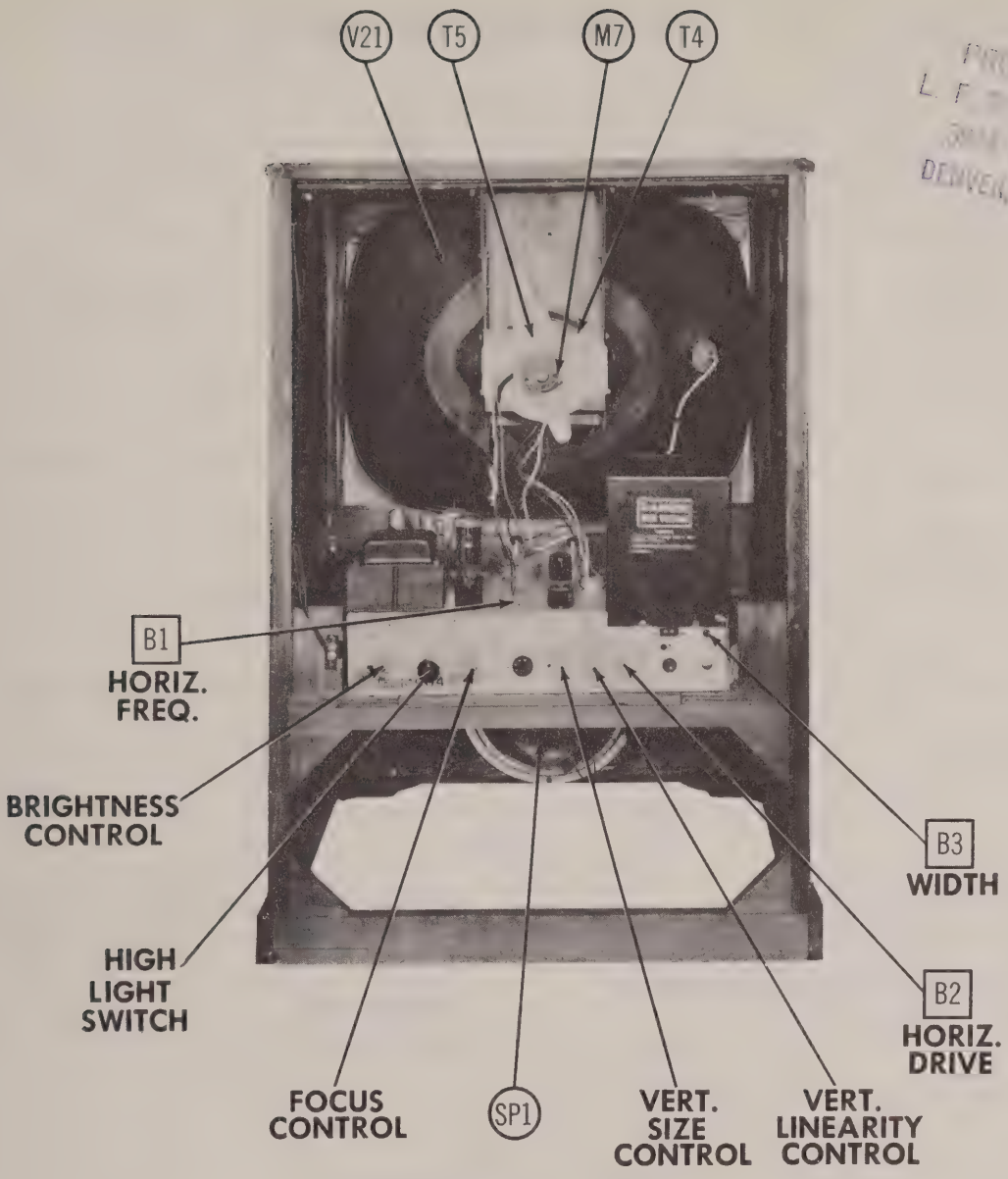


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to its mid-range position and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B2) to its maximum counter clockwise position without the presence of vertical white lines or compression near the center of the picture.

Adjust the width slug (B3) for a picture slightly wider than necessary to fill the picture mask horizontally.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V16, V17, V18 and V20. Check adjustments B2 and B3. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C74, C75, C76, R100, R101 and other associated components.	Check R95, R97, C72, C73 and other associated components.

DRIVE LINES

Check adjustments B2. Check by substitution V17 and V18. Check T2, T4A, C81, C75, C72, R102, R94, R97 and other associated circuit components.

COMPRESSED LEFT SIDE

Check by substitution V17 and V18. Check adjustment B2 and B3. Check components associated with the horizontal output and damper stages especially T2 and T4A.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check C68 for open. Check V17 and V18 for internal arcing.

XMAS TREE EFFECT

Substitute V16. Check C70, C71, L19 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V14 and V15. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R7 and other associated components.	Check R79, R6, R77, C60, C63 and other associated components.

INSUFFICIENT SWEEP

Check adjustment of vertical size and linearity controls. Proceed as outlined under "Loss of Sweep".

COMPRESSED AT BOTTOM

Check by substitution V14 and V15. Check T3, T4B, C3B and other associated components.

COMPRESSED AT TOP

Check by substitution V14 and V15. Check C62, C63, R78, R79 and other associated components.

COMPRESSED TOP AND BOTTOM

Check T3 and T4B.

FOLDS

Check by subsitution V14 and V15. Check associated circuit components for failure or change of value.

SYNC

LOSS OF HORIZONTAL AND VERTICAL SYNC

Substitute V13. Check associated components especially C55, C57, R66, R67, R68 and R69.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V13 and V14. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check C60, R75, R76, R77 and other associated components.	Check vertical integrator and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V11 and V16. Check C64, C65, C66, C70, C71, R83, R84, R85, R92, R95 and other associated components for failure or change of value.

HORIZONTAL BENDING

Check by substitution V11, V16 and V17. Check the horizontal AFC filter or change of value.

VIDEO

LOSS OF VIDEO

Substitute V7. Check picture tube, R43, R40, L16, C41 and other associated circuit components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best picture and sound. Check video IF alignment.

POOR CONTRAST

Substitute V7. Check video detector crystal and assembly. Check contrast control, picture tube and other associated circuit components.

NEGATIVE PICTURE

Check by substitution V8, V7, V3, V4 and V1. Check AGC network components. Check picture tube and other associated circuit components. Check video detector assembly.

SMEAR

Substitute V7, V6, V5, V4 and V3. Check video detector assembly. Check C41, R40, R43, L15, L16, picture tube and other associated components for failure or change of value.

WIDE BLACK BAR ACROSS PICTURE

Check V1, V3, V4, V5, V6 and V7 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10, V11 and V12. Check stages V11A and V12 using audio signal generator. Apply audio signal across R57.

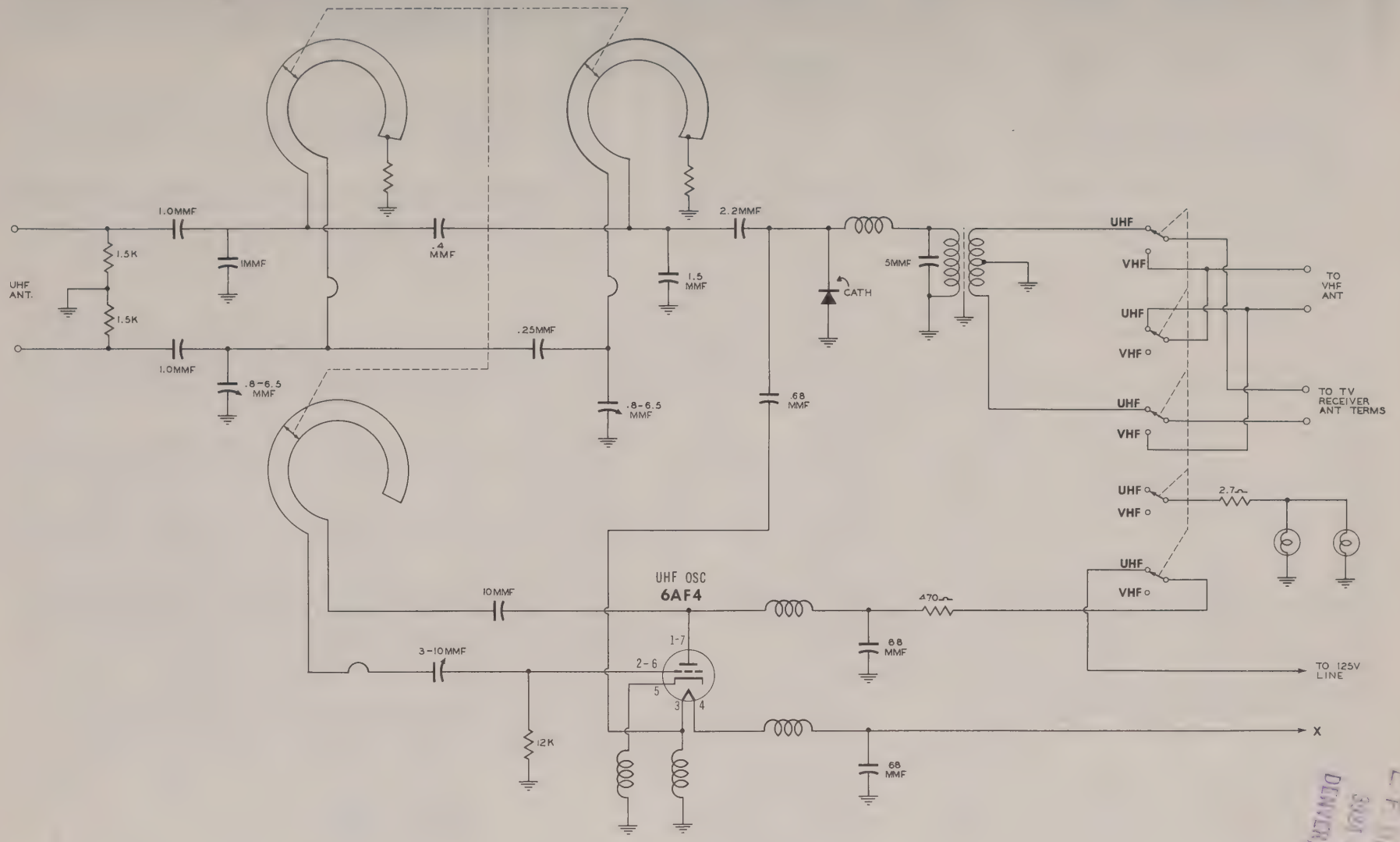
If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF alignment and components.	Check components associated with V11A and V12 especially C53 and T7.

BUZZ

Adjust tuner fine tuning for best picture and sound. Adjust A8 for minimum buzz. If still unsatisfactory, substitute V10 and realign audio IF and ratio detector stages. Check C6 and C79.

DISTORTED

Follow procedure outlined under "Weak or No Sound".



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UHF TUNER USED IN SOME MODELS

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UHF- TUNER SCHEMATIC

SCOTT
MODELS 824C, CH, DB, DBH, DM, DMH, 924XW (Ch. 9045)

PARTS LIST & DESCRIPTION

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: SCOTT Part No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF Amp.	6BA6	6BA6	7BK	
V4	2nd Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	4th Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output	12BY7	12BY7	9BF	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	AF Amplifier-Horiz. AFC	12AX7	12AX7	9A	
V12	Audio Output	6V6GT	6V6GT	7B	
V13	Sync Separator-Sync Amplifier	12AU7	12AU7	9A	
V14	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V15	Vert. Output	6AH4GT	6AH4GT	8EL	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6CD6G	6CD6G	8BT	
V18	Damper	6V3	6V3	9BD	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: SCOTT Part No.	CBS-HYTRON Part No.	GENERAL ELECTRIC Part No.	SYLVANIA Part No.	WESTINGHOUSE Part No.	RETMA BASE TYPE	NOTES
V21	24CP4	24CP4A	24CP4	24CP4 24CP4A		12N 12N	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	SCOTT Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No	NOTES
C1A	▲40	450	C1C-10075	AFH4-79		B045		FP447	TYL-3788	
B	▲40	450				BR2045				
C	▲20	450								
C2	50	350	C1A-10087	PRS450/50		BR5035		TC68	TVA-1713	
C3A	20	450	C1C-10050	PRS450/20		BR2045		TC75	TVA-1709	Red
B	100	25		PRS25/100		BR3251A		TC2501	TVA-1207	Yellow
C4A	▲40	350	C1C-10074	AFH2-28		C022		FP330.7	TYL-2617	
B	▲10	250								
C5	4	50	C1A-10037A	PRH150/4		BR550		TC30	TVA-1303	
C6	4	50	C1A-10037A	PRH150/4		BR550		TC30	TVA-1303	
C7	3-8				839-10		3139-01-IR6			
C8	1000			EF-001	MFT-1000				503C-D1	
C9	2.2			SI2.2NP0	TCZ-2.2	Z006	NP0K-2R2		5TCCB-V22	
C10	1000			EF-001	MFT-1000				503C-D1	
C11	3-3				839-3		311-01-3R5	CT565A		
C12	1.5			SI1.5NP0	TCZ-1.5	Z004	NP0K-1R5	ZT-5515	5TCCB-V15	
C13	47			BPD-000047	D6-470	G033	GP1K-470	UC-5447	5GA-Q47	
C14	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C15	1000			EF-001	MFT-1000				503C-D1	
C16	47			BPD-000047	D6-470	G033	GP1K-470	UC-5447	5GA-Q47	
C17	3-3				839-3		311-01-3R5	CT565A		
C18	20			SI20N750	TCN-20	Z023	N750K-200	NT-542	5TCU-Q2	
C19	10			SI10NP0	TCZ-10	Z018	NP0K-100	ZT-541	5TCC-Q1	
C20	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C21	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0K-6R8	ZT-5568	5TCCB-V68	
C22	1000			EF-001	MFT-1000				503C-D1	
C23	1000			EF-001	MFT-1000				503C-D1	
C24	120			BPD-00012	D6-121	G044	GP2K-121	UC-5312	5GA-T12	
C25	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C26	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C27	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C28	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C29	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C30	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C31	.5	200		PS88-5		CUB2P5		PT405	2TM-P5	
C32	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C33	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C34	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C35	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C36	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C37	10			SI10NP0	TCZ-10	TZ09	NP0K-100	ZT-541	5TCC-Q1	
C38	5			SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-556	5TCCB-V47	
C39	330	500				5R5T33				
C40	1500	500		1468-0015	D6-152	1W5D15	GP2L-152	MC256	1FM-215	
C41	.1	600		PS68-1	DF-104	CUB6P1		PT601	6TM-P1	
C42	270	500				5R5T27				
C43	5			SI5NP0	TCZ-4.7	TZ07	NP0K-050	ZT-555	5TCCB-V47	
C44	39	500		1468-00004	D6-390	5W5G39	GP1K-390	MC223	1FM-44	
C45	39	500		1468-00004	D6-390	5W5G39	GP1K-390	MC223	1FM-44	
C46	.02	600		PS88-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C47	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C48	.02	600		PS88-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C49	1000			SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C50	.004	400		PS88-004	D6-402	CUB6D4	GP2-333-402	PT624	6TM-D4	
C51	.02	600		PS88-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C52	.005	600		PS88-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C53	.005	600		PS88-05	DF-503	CUB6S5		PT815	6TM-S5	
C54	.01	600		PS88-01	DF-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C55	.005	600		PS88-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C56	220			SI220	D6-221	TP39	GP2K-221	UC-5323	5GA-T22	
C57	.25	600		884-25		CUB6P25		PT625	6TM-P25	
C58A	.002							PT622		
B	.005		●C1MX-10012	●PA-110	●PC-100	●115TM1	●1405-01	PT625	●10AC1	
C	.005							PT625		
C59	.005	600		PS88-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	

Note 1. Not used in all Models.
● Items C58A, C58B, C58C, R71A, R71B, R71C are combined in one unit.

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	SCOTT Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C60	.005	600		PS88-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C61	.01	600		PS88-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C62	.05	600		PS88-05	DF-503	CUB6S5		PT815	6TM-S5	
C63	.1	600		PS88-1	DF-104	CUB6P1		PT601	6TM-P1	
C64	270	500				5R5T27				
C65	.001	600		PS88-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C66	.01	1000		P1088-01	DD16-103	CUB16S1		PT1611	MB-S1	
C67	.001	600		PS88-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C68	.005	600		PS88-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C69	.05	600		PS88-05	DF-503	CUB6S5		PT615	6TM-S5	
C70	.004	400	CPA-14402B	1464-004		1R5D4		MCB463	MB-24	
C71	430	500				5R5T43				
C72	430	500				5R5T43				
C73	430	500				5R5T43				
C74	.05	600		PS88-05	DF-503	CUB6S5		PT615	6TM-S5	
C75	.0033	600		PS88-0033	D6-332	CUB6D33	GP2-333-332	PT6233	6TM-D33	Note 1
C76	.1	600		PS88-1	DF-104	CUB6P1		PT601	6TM-P1	
C77	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C78	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C79	5000		C1MX-10002	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C80	.05	600		PS88-05	DF-503	CUB6S5		PT615	6TM-S5	
C81	39									

Note 1. Not used in all Models.
● Items C58A, C58B, C58C, R71A, R71B, R71C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: SCOTT Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	750Ω	½	VCA12140	QJ-531 *	RTV-445		UF-751-T52	Contrast-tapped ⑤ 400Ω-Panel
B	1 Meg	½					UR16-T254 †	Volume-tapped ⑤ 250KΩ-Rear
C	Switch						US-26	Attach to R1B
R2A	1.5Meg	½	VC12132	Q11-138	A47-2 Meg-S	AB-59	U-155	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	50KΩ	½	VC12131	Q11-123	A47-50K-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R3A
R4A	100KΩ	½	VCA12135	Q11-130	A47-100K-S	AB-40	SU-41	Brightness
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A
R5A	1500Ω	4	VC12122	4WS-1500	A10-1500	SVP-994	TVF140	Focus-wire wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A
R6A	2.5Meg	½	VC1121	Q11-239	A47-2.5Meg -S	AB-53	SU-565	Vert. size
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	1500Ω	4	VC12122	4WS-1500	A10-1500	SVP-994	TVF140	Vert. linearity-wire wound
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R7A

Note. Some models use alternate control (Part # VCA12120C)
* CONCENTRIKIT EQUIVALENT -KIT K-2, BASE ELEMENTS & SHAFTS B17-105X & P1-210 (Panel)
B 13-137X & R2-226 (Rear) & SWITCH 76-1.
† Universal replacement-(Mallory exact duplicate Part # UE18S)

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: SCOTT Part No.	IRC Part No.	NOTES
R8	15KΩ	½		BTS-15K	
R9	47KΩ	½		BTS-47K	
R10	100KΩ	½		BTS-100K	
R11	160KΩ	½		BTS-160K	
R12	100KΩ	½		BTS-100K	
R13	1500Ω	½		BTS-1500	
R14	100KΩ	½		BTS-100K	
R15	220KΩ	½		BTS-220K	
R16	10KΩ	½		BTS-10K	
R17	15KΩ	½		BTS-15K	
R18	22KΩ	½		BTS-22K	
R19	82Ω	½		BTS-82	Note 1
R20	180KΩ 5%	½		BTS-180K 5%	
R21	330KΩ	½		BTS-330K	
R22	100Ω	½		BTS-100	
R23	10 Meg	½		BTS-10 Meg	
R24	470Ω	½		BTS-470	
R25	220KΩ	½		BTS-220K	
R26	100KΩ	½		BTS-100K	Note 2
R27	8200Ω	½		BTS-8200	
R28	82Ω	½		BTS-82	
R29	100Ω	½		BTS-100	
R30	220KΩ	½		BTS-220K	
R31	10KΩ	½		BTS-10K	
R32	180Ω	½		BTS-180	
R33	100Ω	½		BTS-100	
R34	6800Ω	½		BTS-6800	
R35	100Ω	½		BTS-100	
R36	100Ω	½		BTS-100	
R37	8200Ω	½		BTS-8200	
R38	33Ω	½		BTS-33	
R39	1000Ω	½		BTS-1000	
R40	220KΩ	2		BTS-220K	
R41	10KΩ	½		BTS-10K	Note 3
R42	10KΩ	2		BTB-10K	Note 3
R43	100KΩ	½		BTS-100K	
R44	100KΩ	½		BTS-100K	Note 4
R45	330KΩ	½		BTS-330K	
R46	47KΩ	½		BTS-47K	
R47	220KΩ	½		BTS-220K	
R48	220KΩ	½		BTS-220K	
R49	47KΩ	½		BTS-47K	
R50	1000Ω	½		BTS-1000	
R51	12KΩ	½		BTS-12K	
R52	33KΩ	½		BTA-33K	Note 5
R53	1000Ω	½		BTS-1000	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: SCOTT Part No.	IRC Part No.	NOTES
R54	15KΩ	½		BTS-15K	
R55	15KΩ	½		BTS-15K	
R56	18KΩ	½		BTS-18K	
R57	10 Meg	½		BTS-10 Meg	
R58	10Ω	½		BTS-10	
R59	470KΩ	½		BTS-470K	
R60	220Ω	½		BTS-220	
R61	330KΩ 5%	½		BTS-330K 5%	
R62	180KΩ 5%	½		BTS-180K 5%	
R63	330Ω	½		BTA-330	
R64	18KΩ	½		BTS-18K	
R65	470KΩ	½		BTS-470K	
R66	2.2 Meg	½		BTS-2.2Meg	
R67	4700Ω	½		BTS-4700	
R68	47KΩ	½		BTS-47K	
R69	100KΩ	½		BTS-100K	
R70	15KΩ	½		BTS-15K	
R71A	22KΩ	½		BTS-22K	
B	8200Ω	½		● CMX-10013 BTS-8200	
C	8200Ω	½		BTS-8200	
R72	330KΩ	½		BTS-330K	
R73	33KΩ	½		BTS-33K	
R74	1500Ω	½		BTS-1500	Note 6
R75	470KΩ	½		BTS-470K	
R76	1 Meg	½		BTS-1 Meg	
R77	1 Meg	½		BTS-1 Meg	Note 7
R78	10KΩ	½		BTS-10K	
R79	2.2 Meg	½		BTS-2.2Meg	
R80	330Ω	½		BTA-330	
R81	560Ω	½		BTS-560	
R82	560Ω	½		BTS-560	
R83	100KΩ	½		BTS-100K	
R84	47KΩ	½		BTS-47K	
R85	680KΩ	½		BTS-680K	
R86	470KΩ	½		BTS 470K	
R87	47KΩ	½		BTS-47K	
R88	47KΩ	½		BTS-47K	
R89	47KΩ	½		BTS-47K	
R90	1500Ω	½		BTS-1500	Note 6
R91	680Ω	½		BTS-680	Note 11
R92	150KΩ	½		BTS-150K	
R93	4.7Meg	½		BTS-4.7Meg	Note 4
R94	12KΩ	½		BTS-12K	
R95	68KΩ	½		BTS-68K	
R96	68Ω	½			
R97	820KΩ	½		BTS-820K	Note 8
R98	270Ω	½			Note 9

RESISTORS (cont)

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: SCOTT Part No.	IRC Part No.	NOTES
R99	680Ω	2		BTB-680	Note 9
R100	18KΩ	2		BTB 18K	
R101	33KΩ	1		BTA-33K	Note 4
R102	1000Ω	½		BTS-1000	
R103	.8Ω	3			
R104	270Ω	2			Note 10

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: SCOTT Part No.	IRC Part No.	NOTES
R105	1000Ω	2			
R106	1500Ω	1		BTA-1500	
R107	100KΩ	½		BTS-100K	
R108	220KΩ	½		BTS-220K	
R109	22KΩ	1		BTA-220K	

Note 1. Some models may use a 68Ω resistor in this application.
Note 2. Some models may use a 220KΩ resistor in this application.
Note 3. Some models may use a single 5KΩ (4 watt) resistor in this application.
Note 4. Not used in all models.
Note 5. Some models may use a 39KΩ resistor in this application.
Note 6. Some models may use a 1000Ω resistor in this application.
Note 7. Some models may use a 820KΩ resistor in this application.
Note 8. Some models may use a 1 Meg resistor in this application.
Note 9. Some models may use a single 300Ω (2 watt) resistor in this application.
Note 10. Some models may use a 200Ω resistor in this application.
Note 11. Some models may use a 5800Ω resistor in this application.
● Items R71A, R71B, R71C, C58A, C58B, C58C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: SCOTT Part No.	Stancor Part No.	Merit Part No.	Triad Part No.	RCA TYPE No.	Halldorson Part No.	Thordarson Part No
T1	117VAC ②3.03A	725VCT ③ .240A	5VAC ④ 3A	TPC-10013C	P-8169 ⑤	P-3078 ⑥	R-35BC ① ③		P97U ① ②	26R15 ③ ④
	SEC 3	SEC 4	SEC 5							
	6.3VAC ③ 3.2A	6.3VAC ④ 6.1A								

① Tape 5V ④ 2A winding.
② Mount top side of chassis.
③ Drill new mounting holes.
④ Tape 5V ④ 3A winding.
⑤ Parallel and phase 6.3V ④ 1A & 7A windings and use for Sec. 4.
⑥ Do not use 6.3V ④ 1.5A winding.
⑦ Use Hi-tape on high voltage secondary only.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: SCOTT Part No.	Stancor Part No.	Merit Part No.	Triad Part No.	RCA TYPE No.	Halldorson Part No.	Thordarson Part No.
T2	Horiz. Output Trans.	THC-10031						
T3	Vert. Output Trans.	TOA-10061	A-414 ① ②	A-3038 ① ②	A-99X ① ②		Z1803 ① ②	T-26553 ②
T4A	Yoke-Horiz. (11.5 MH)	FCB-10014		MDF-90 ③	Y-50-1	210DI ③		Y-14
B	Yoke-Vert. (40MH)							
T5	Focus	FCB-10010 FCB-10015 ④						
T6	Width-(.06-.3MH)	TOA-10023C	WC-1		201RI	201RI		WC-11

① Drill one new mounting hole.
② Connect as auto transformer.
③ Use original yoke network and leads.
④ Alternate PM focus unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: SCOTT Part No.	Stancor Part No.	Merit Part No.	Triad Part No.	Halldorson Part No.	Thordarson Part No	NOTES
T7	5.2KΩ	3.4Ω	TOC-10035	A-3877	A-3930	S-3X	Z1000	TS-24551	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V C	IMP.	REPLACEMENT DATA: SCOTT Part No.	VIKING Part No.	QUAM Part No	NOTES
SP1	10"	PM	3.4Ω		SR-10024 ①	10J11	10A31	↓ used in models 824DM, 824DMH

COILS (RF-IF)

ITEM No.	USE	DC RES: PRI	SEC.	REPLACEMENT DATA: SCOTT Part No	MEISSNER Part No	MERIT Part No	MILLER Part No	NOTES
L1	Ant. Coils	OHCT	OΩ					
L2	Fil. Choke	OΩ						
L3	Neutr. Coil	OΩ						
L4	RF, Mixer grid & Osc. coils	OΩ						
L5	Fil. Choke	OΩ						
L6	RF Choke	OΩ						
L7	1st Video IF	1Ω						
L8	RF Choke	1.2Ω						
L9	2nd Video IF	1Ω	.1Ω	TSA-10054B	17-1062	TV-116	6250	
L10	Fil. Choke	OΩ		LGA-10019A	19-3001	TV-189	6175	.4 Microhenry
L11	3rd Video IF	1Ω	.1Ω	TSA-10054B	17-1063	TV-116	6249	
L12	4th Video IF	1Ω	.1Ω	TSA-10054B	17-1063	TV-116	6249	
L13	5th Video IF	1Ω	.1Ω	TSA-10054B	17-1064	TV-116	6250	
L14	Series Peak. Coil	7.5Ω		LGA-10032	19-3125		6153	120 Microhenries
L15	Shunt Peaking Coil	9.5Ω		LGA-10033	19-3180	TV-184	6180	180 Microhenries
L16	Series Peaking Coil	8.5Ω		LGA-10034	19-3083	TV-181	6177	100 Microhenries
L17	Sound IF	3Ω		TSA-10050C	17-3400	TV-151	1470	
L18	Ratio Det.	1Ω	.3OCT	TSB-10053A	17-1033	TV-110	1466	Tertiary windings 25Ω
L19	Horiz. Osc.	65Ω		LGA-10017B	19-1576	TV-163	6210	

DENVER, COLORADO

PARTS LIST & DESCRIPTION (continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SCOTT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	5A 250V			312005. (3AG-5A)	341001	MTH5	HKP
M2	3AG S/B	1/2A 125V			313. 500 (3AG S/B-1/2A)	121001 (2 used)	MDL 1/2	4592 (2 used)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SCOTT PART No.	SYLVANIA PART No.	FEDERAL PART No.	
M3	1N60		1N60	1N60	Video detector

MISCELLANEOUS

ITEM No.	PART NAME	SCOTT PART No.	NOTES
M4	Tuner	TT-10014	VHF
M5	Tuner	TTC-10015C	UHF
M6	Switch	VSA-10012	"Highlight" control
M7	Ion trap	ITA-10003	
B2	Trimmer cap	CTA-10005	Horiz. drive (25-280MMF)
	Cabinet	ZW-10190	Model 824C & 824CH
	Cabinet	ZW-10192	Model 824DM & 824DMH
	Cabinet	ZW-10191A	Model 824DB & 824DBH
	Cabinet		Model 924XW
	Knob	KA-10148	Vert. & horiz. hold (824C & 824DM only)
	Knob	K-10135	Volume
	Knob	K-10136	Fine tuning
	Knob	K-10137	Chan. selector
	Knob	K-10138	Contrast
	Knob	K-10151	Horizontal hold (824CH, DMH, DBH only)
	Knob	K-10142	Vertical hold (824CH, DMH, only)
	Knob	KB-10152	UHF tuning (H models only)
	Safety glass	DWC-10048	824C, CH, DM, DMH
	Safety glass	DWC-10041	824DB, DBH
	Dial	DWC-10054	UHF

TROUBLE SHOOTING AIDS (cont)

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POWER

DEAD SET

If filaments fail to light, check fuse M1, AC interlock assembly, switch on volume control and T1. If filaments light, check fuse M2. Substitute V20. Check B+ filter and decoupling network components.

SMALL AND/OR DIM PICTURE

Substitute V20. Check B+ filter and decoupling network components for failure or change of value.

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V16, V17, V18 and V19. Check waveform W15.

If Satisfactory	If Unsatisfactory
Check T2, T4A, R103, R100 R101, C74 and other associated components.	Check C71, C73, C72, R95, R97 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substiution V16, V17, V18, V19 and V20. Check picture tube. Proceed as outlined under "Loss of High Voltage".

BLOOMING

Check by subsitution V16, V17, V18, V19 and V20. Check T2, T4A, R103, R100, R101, C74 and other associated components for failure or change of value.

GENERAL

RASTER SOUND NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER PICTURE NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER NO SOUND NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check tuner and video IF components. Check video detector assembly.

NO RASTER NO SOUND

Follow procedure outlined under "Dead Set".

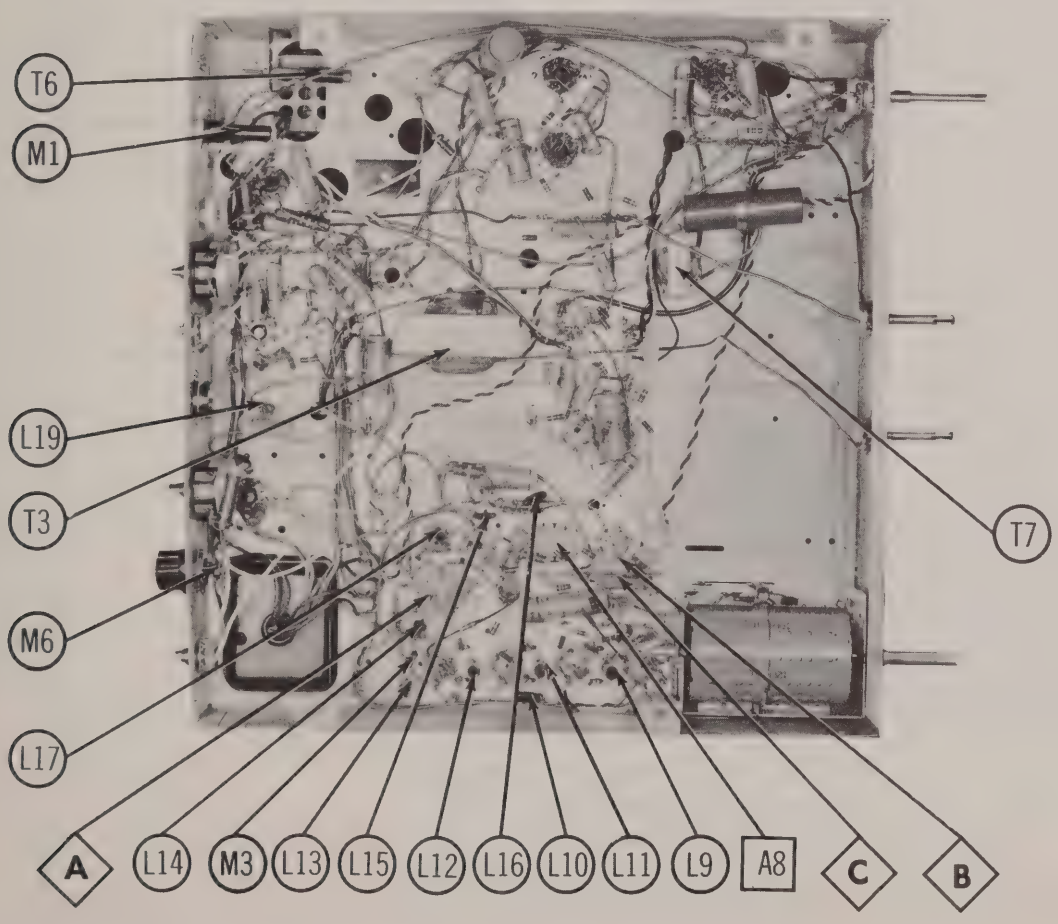
KEYSTONE EFFECT

Check T4, C81, R102, R81 and R82.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR & ALIGN. IDENTIFICATION

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, thru the small hole in the cabinet to the right of the channel selector shaft.

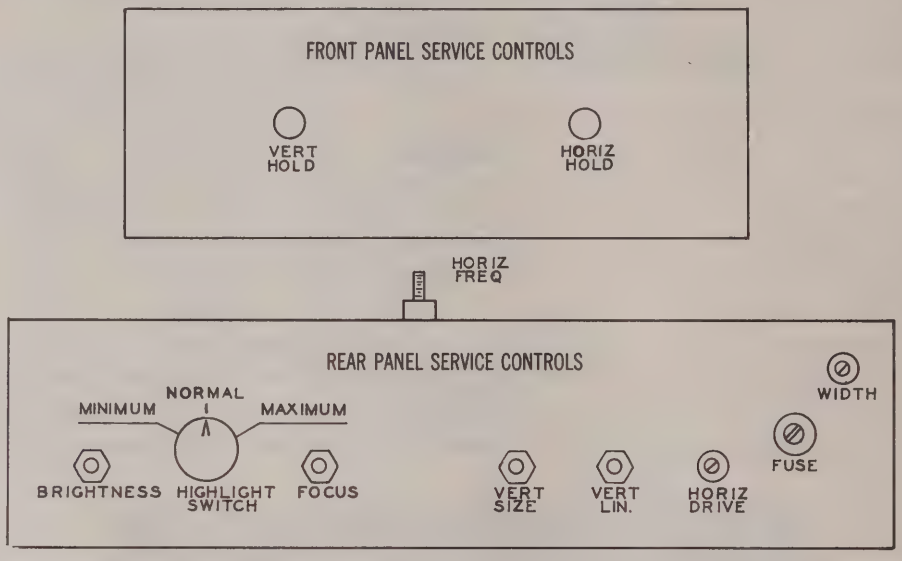
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass remove four (4) wood screws holding wood strip at top front of cabinet. Remove wood strip and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horizontal hold control at the center of its range and adjust the horizontal frequency slug (L19) until picture synchronizes horizontally. (For location see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L18) located on the bottom of chassis. Screen removable from bottom of cabinet. (See tube placement chart).

FUSES

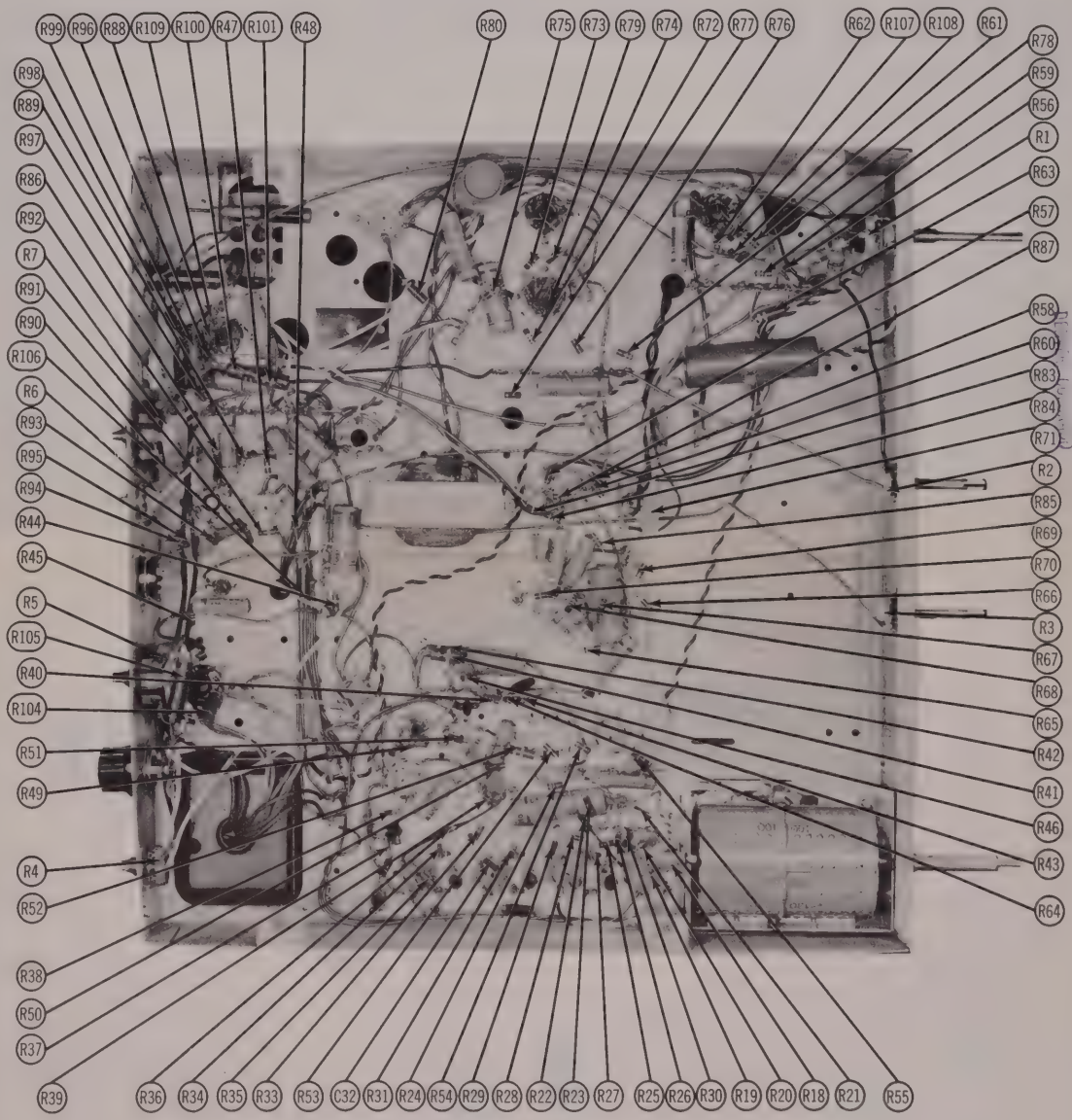
Two fuses are used. One for AC line and one for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side , and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push-on type control knobs from front panel.
2. Remove 7 wood screws and 1 metal screw. Remove rear cover.
3. Disconnect built-in antenna, speaker leads, CRT socket, HV plug and yoke plug.
4. Remove 2 wood screws. Remove transmission lines.
5. Remove 4 chassis. Remove chassis.
6. Remove 2 speaker nuts. Remove speaker.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 14 IN SET 185

Model 2D1230C

Truetone Model 2D1230B is covered in Photofact Folder 14, Set 185. Later production changes and model additions are given below.

Model 2D1230C is identical to model 2D1230B except an AGC control was added to the chassis. A 2.5Meg potentiometer (part #40X364) and 2.7Meg resistor, connected in series, were added between the AGC line to the tuner and the 125 volt line. This control and resistor combination take the place of the 3.9Meg resistor (R32), which is omitted when the control is used.

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Model 2D1230D

Model 2D1230D is identical to model 2D1230C except for the following:

TO STABILIZE VERTICAL OSCILLATOR CIRCUIT

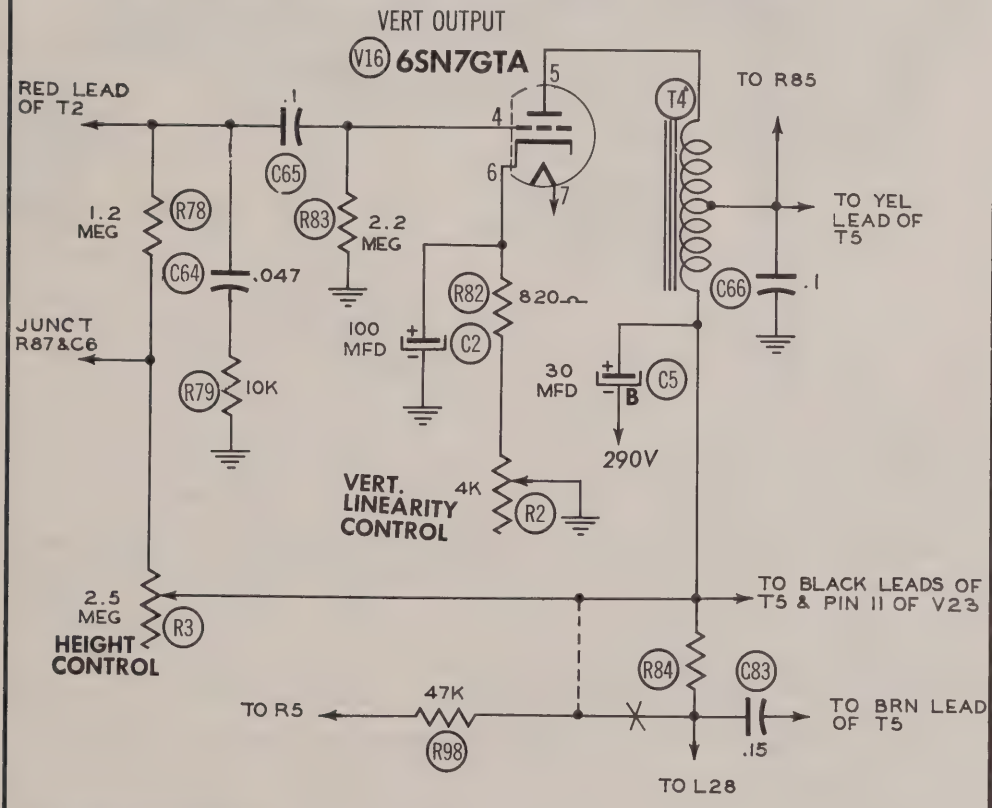
The vertical oscillator and output tube (V16) was changed from a type 6BL7GT to a 6SN7GTA. When this change is made the following changes were made in component values.

R84 was changed from 15KΩ to 6.8KΩ.

R82 was changed from 1500Ω to 820Ω.

R83 was changed from 1Meg to 2.2Meg.

A partial schematic showing the revised vertical output circuit is shown below.



TO ELIMINATE DRIVE BAR

The coupling capacitor (C80) between the horizontal multivibrator and horizontal output tube was changed to 200MMF.

PRODUCTION CHANGES
BULLETIN 98

TRUETONE MODELS 2D1230C, D, E, 2D1330A, 2D1430A, 2D2433A

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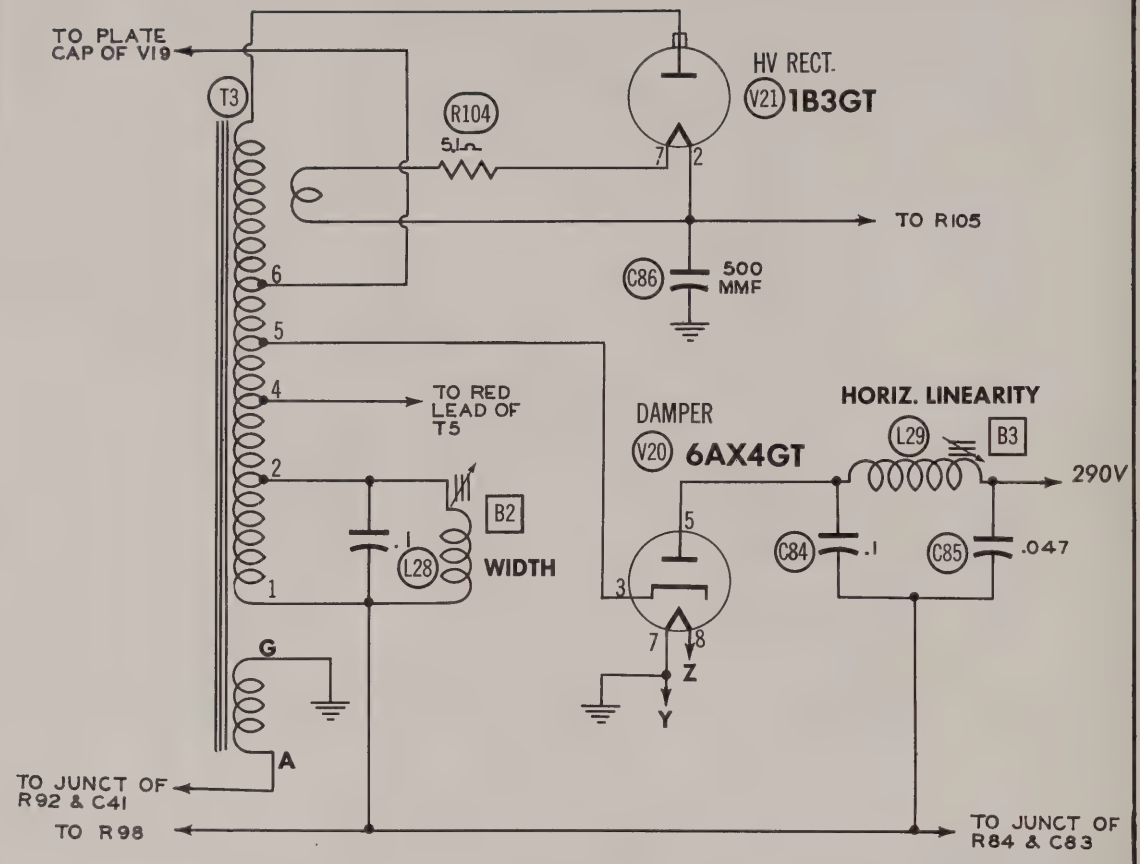
	TO ELIMINATE SHOCK HAZARD A 100KΩ resistor was added in parallel with the fuse (M1). This allows a path for the input filter capacitor to discharge in the event of fuse failure.
Model 2D1230E	Model 2D1230E is identical to model 2D1230D except for slight change in cabinet design.
Model 2D1330A	Model 2D1330A is identical to model 2D1230E except the damper tube was changed to a type 6AX4GT. A partial schematic is given below which shows the new circuit.



Models 2D1430A, 2D2433A	Models 2D1430 and 2D2433A are identical to model 2D1330A except for the following. NEW PICTURE TUBE Models 2D1430A and 2D2433A use a 21YP4, glass picture tube. When this tube is used the deflection yoke is changed to part #9A2332-2 and the ion trap is changed to part #2A421. COMPONENT CHANGES In addition, to the new picture tube the following changes were made in models 2D1430A and 2D2433A. C79 and R99 were omitted . C78 was changed to 360MMF. The .1MFD capacitor shown connected across the width coil in the partial schematic above is omitted.

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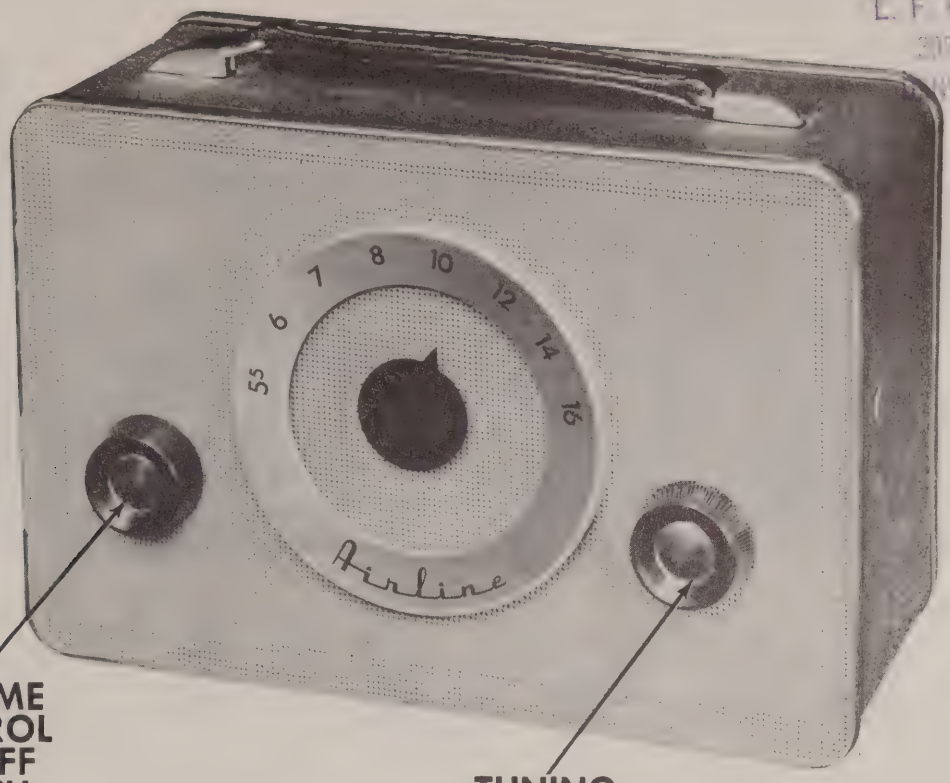
[illegible]
DENVER, COLORADO

AIRLINE
MODEL 35GHM-1074A



AIRLINE
MODEL 35GHM-1074A

TRADE NAME	Airline Model 35GHM-1074A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	105-125 Volts AC-DC (or) 4.5 Volts "A" Supply & 75 Volts "B" Supply
RATING	.14 Amp. @ 117 Volts AC (or) 50MA @ 4.5 Volts DC & 12.5MA @ 75 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set dial pointer to the left edge of "55" on the dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Install chassis in cabinet and connect antenna. Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. (A6 accessible thru hole in cabinet).

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PARTS LIST AND DESCRIPTIONS

AIRLINE
MODEL 35GHM-1074A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	33X124	AFH3-78		C057		FP309	TVL-3427	
B	▲30	150								
C	100	25								
C2	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	47			BPD-00047	D6-470		GP1K-470	UC-5447	5GA-Q47	
C4	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C5A	150						GP1K-151	UC-5315		
B	2000						801-002	DC-522		
C	150			♦PA-136	♦PC-165		GP1K-151	UC-5315	♦103C6	
D	10000						811-01	DC-511		
E	5000						801-005	DC-525		
C6	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C7	.2	200		P288-2		PJ2P2		PT402	2TM-P2	
C8	.2	200		P288-2		PJ2P2		PT402	2TM-P2	
C9	.05	400		489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	
C10	.2	400		P488-2	DF-204	CUB4P2		PT402	4TM-P2	
C11	5000			BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	

♦ Items C5A, C5B, C5C, C5D, C5E, R9A, R9B, R9C and R9D are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2 Meg	½	18X116	Q13-139	A47-2Meg-Z	AB-76	U-55	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWE-20	KB-2	US-27	Attach to R1A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	68KΩ	½		BTS-68K	
R3	470KΩ	½		BTS-470K	
R4	6800Ω	½		BTS-6800	
R5	330Ω	½		BTS-330	
R6	270Ω	½		BTS-270	
R7	4.7Meg	½		BTS-4.7Meg	
R8	4.7Meg	½		BTS-4.7Meg	
R9A	10 Meg	½	♦	BTS-10 Meg	
B	4.7 Meg	½		BTS-4.7Meg	
C	1 Meg	½		BTS-1 Meg	
D	3.3 Meg	½		BTS-3.3Meg	

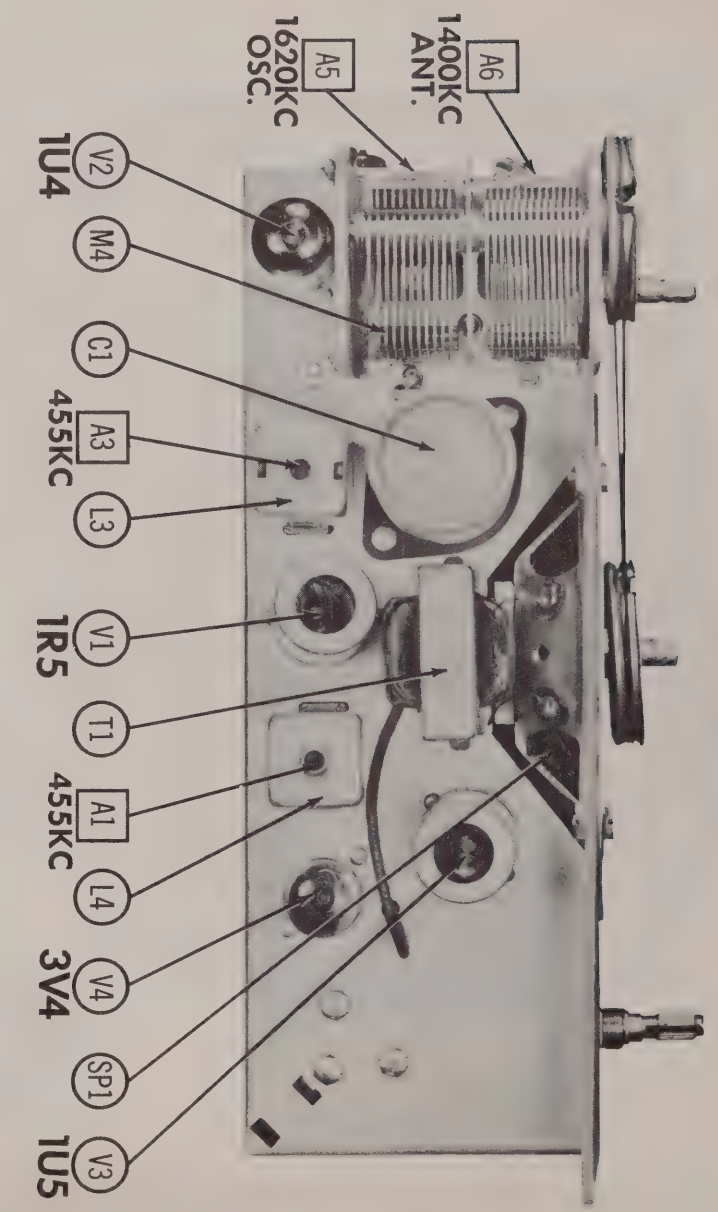
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R10	100KΩ	½		BTS-100K	
R11	4.7 Meg	½		BTS-4.7Meg	
R12	33Ω	½		BTS-33	
R13	470Ω	½		BTS-470	
R14	47Ω	1	A60470		
R15A	610Ω	10	38X131		
B	1800Ω	10			

♦ Items R9A, R9B, R9C, C5A, C5B, C5C, C5D, C5E are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: AIRLINE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	9.2KΩ	3.2Ω	Part of speaker 12X117	A-3329 ①	A-2998 ①	S-11X ①	Z1117 ①	TS-24S60 ①	① Bend mounting tabs down, file out slots, mount on original mounting bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	3.3Ω		75A3				
L2	Osc. Coil	1.7Ω	6Ω	9X120	14-1074		70-Osc.	
L3	Input IF	20Ω	20Ω	9X106	16-6758	BC-352	12-C1	
L4	Output IF	15Ω	15.	9X106	16-6758	BC-353	12-C2	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3.2Ω	12X117	35J4	3A07	

SELENIUM RECTIFIER

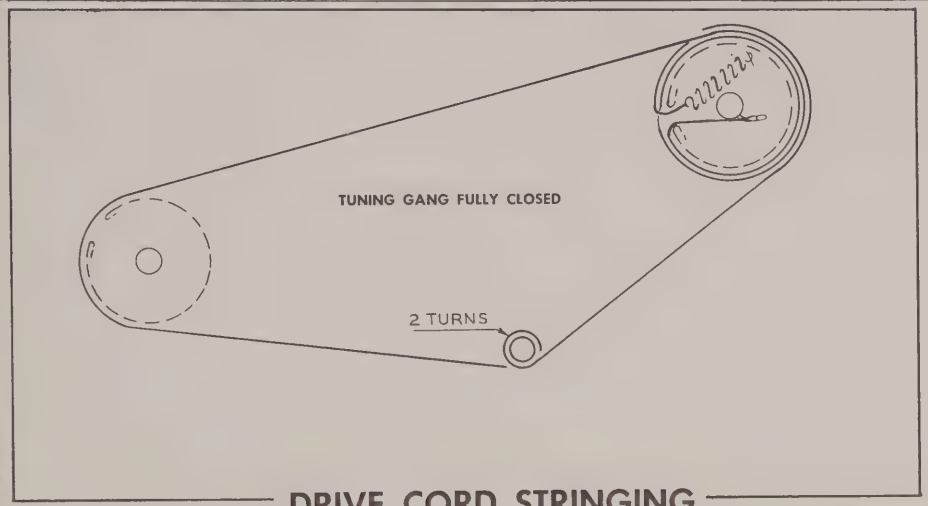
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: AIRLINE PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	NOTES
M1	.061A	34X1D3	5M4	1003	6S75	75	

BATTERIES

ITEM No.	VOLTAGE	AIRLINE PART No.	REPLACEMENT DATA: EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2	1.5V	62-23	950			2R			3 used in series
M3	75V	62-47		437			XX50		

MISCELLANEOUS

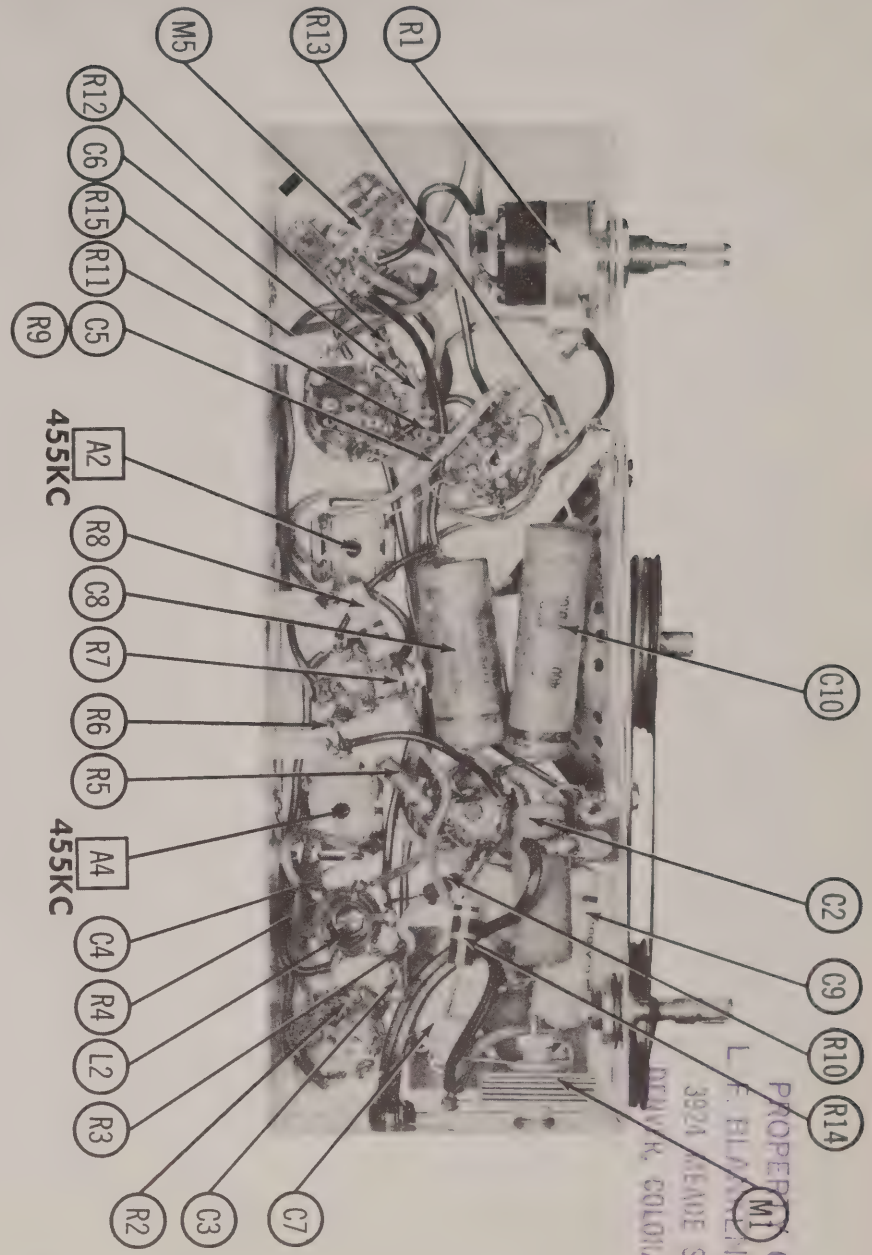
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M4	Tuning cap	24X108	2 section (36-467MMF) (24-155MMF)
M5	Switch	1X104	Power selector
	Cabinet	16X120	
	Knob	10X136	(2) used
	Pointer	25X104	
	Case	41X100	"A" battery holder



DRIVE CORD STRINGING

SET 243 FOLDER 2

CHASSIS—BOTTOM VIEW



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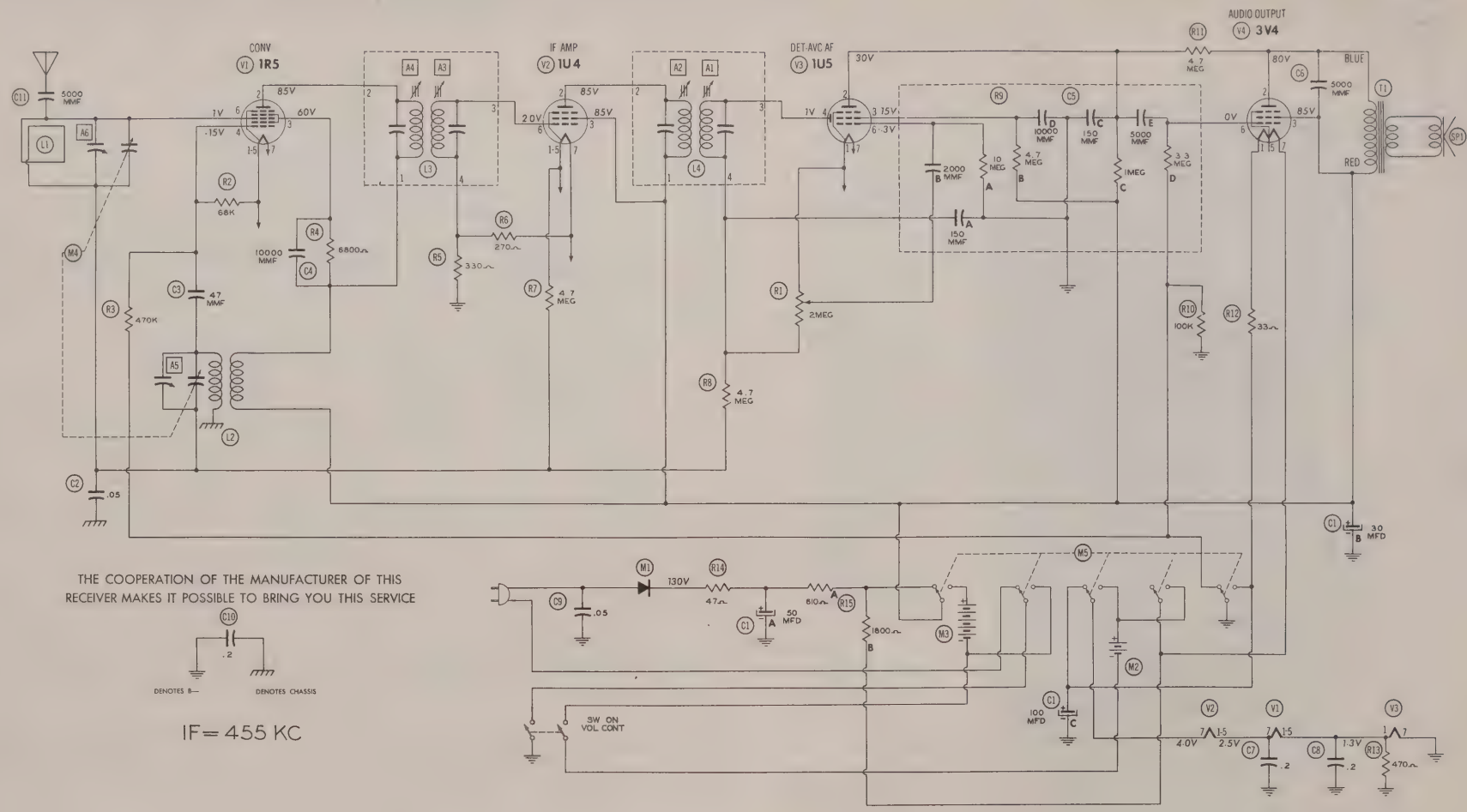
AIRLINE
MODEL 35GHM-1074A

AIRLINE
MODEL 35GHM-1074A



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†660Ω	†7.5KΩ	68KΩ	*	6.7Meg	*
V 2	1U4	*	†660Ω	†660Ω	6.7Meg	*	200Ω	*
V 3	1U5	*	†1Meg	†4.7Meg	2Meg	INF	10Meg	*
V 4	3V4	*	†1.1KΩ	†660Ω	100KΩ	*	3.3Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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PHOTOFACT* Folder

RETMA

TRUETONE
MODEL 2D1358A

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Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

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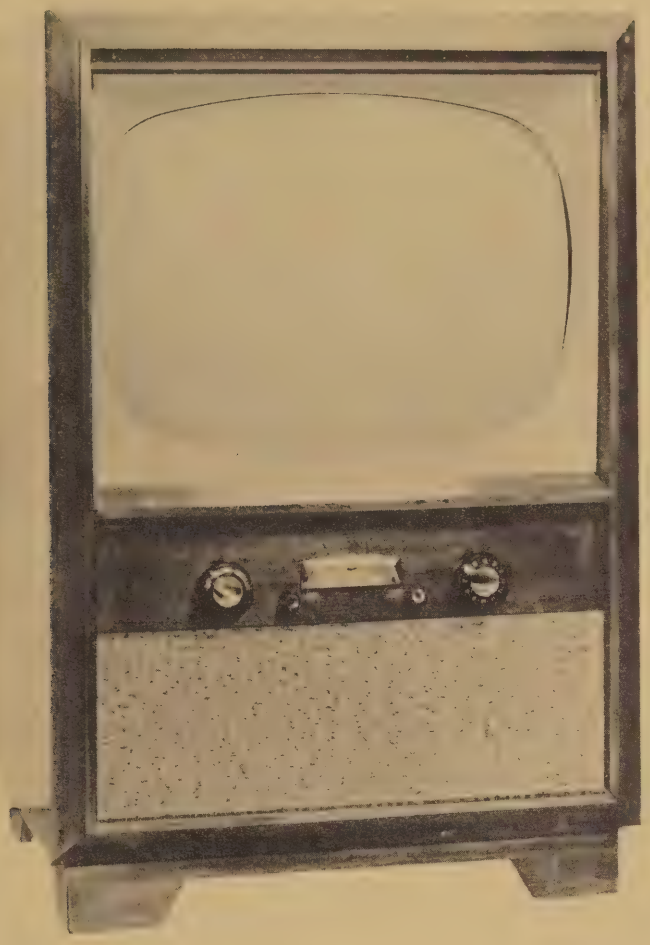

MODEL 2D1358A

TRUETONE
MODEL 2D1358A

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DATE 6–54 SET 242 FOLDER 10

TRUETONE MODEL 2D1358A

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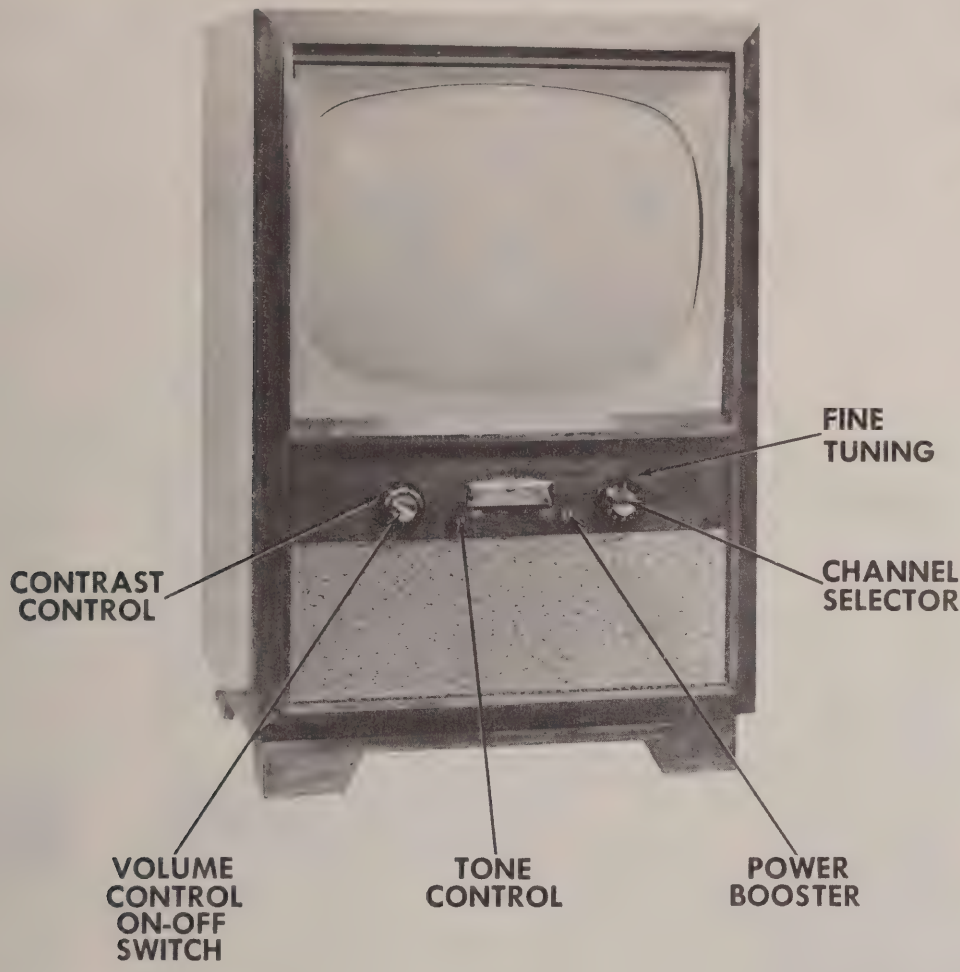

TRUETONE
MODEL 2D1358A

TRADE NAME	Truetone Model 2D1358A
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Twenty-one

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 2.5 Amp. @ 117 Volts AC
TUNING RANGE-Channels 2 thru 13, Video IF 26.75 MC, Sound IF 22.25 MC (Intercarrier)

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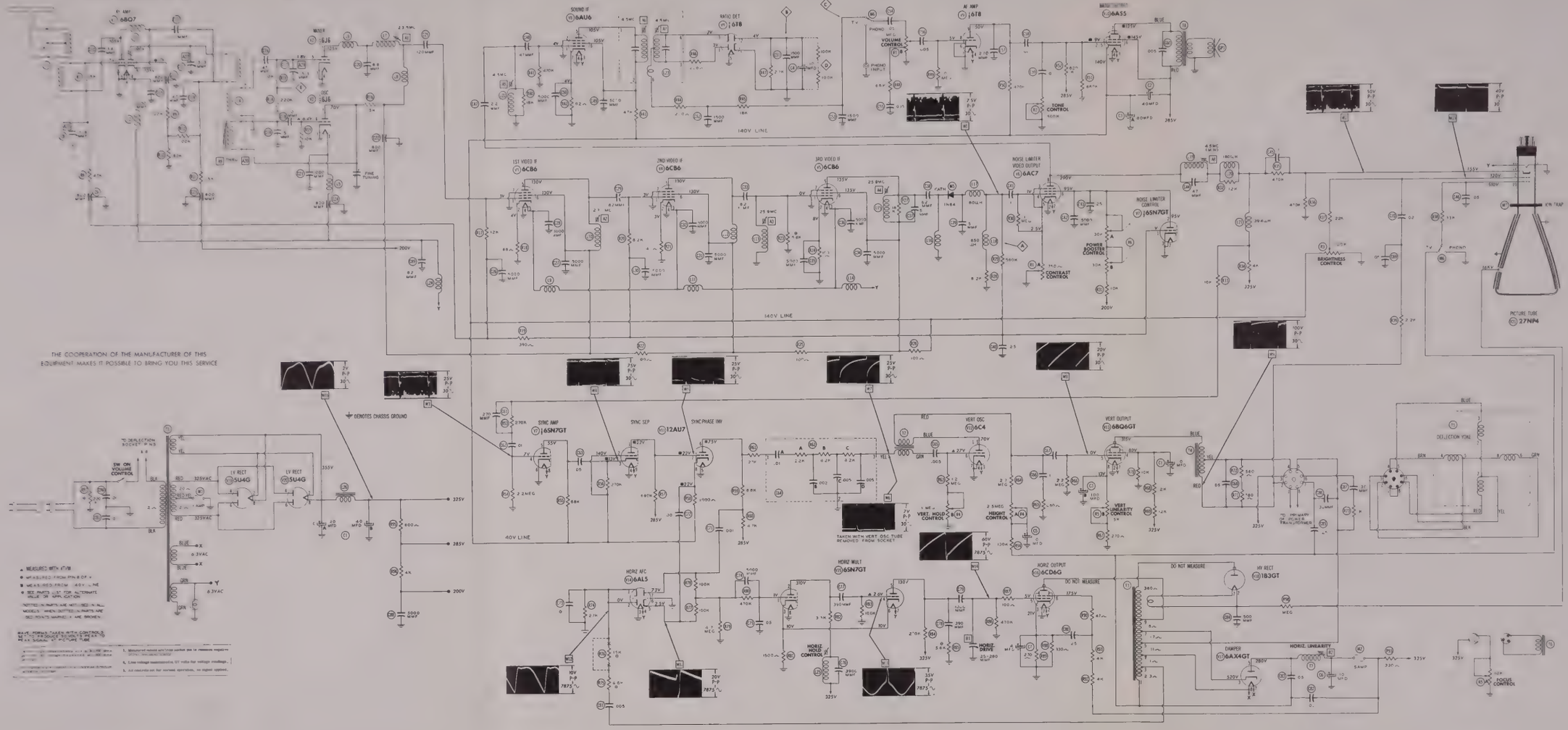
TRUETONE
MODEL 2D1358A
THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DENOTES CHASSIS GROUND
140V LINE
40V LINE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1953
TRUETONE
MODEL 2D1358A

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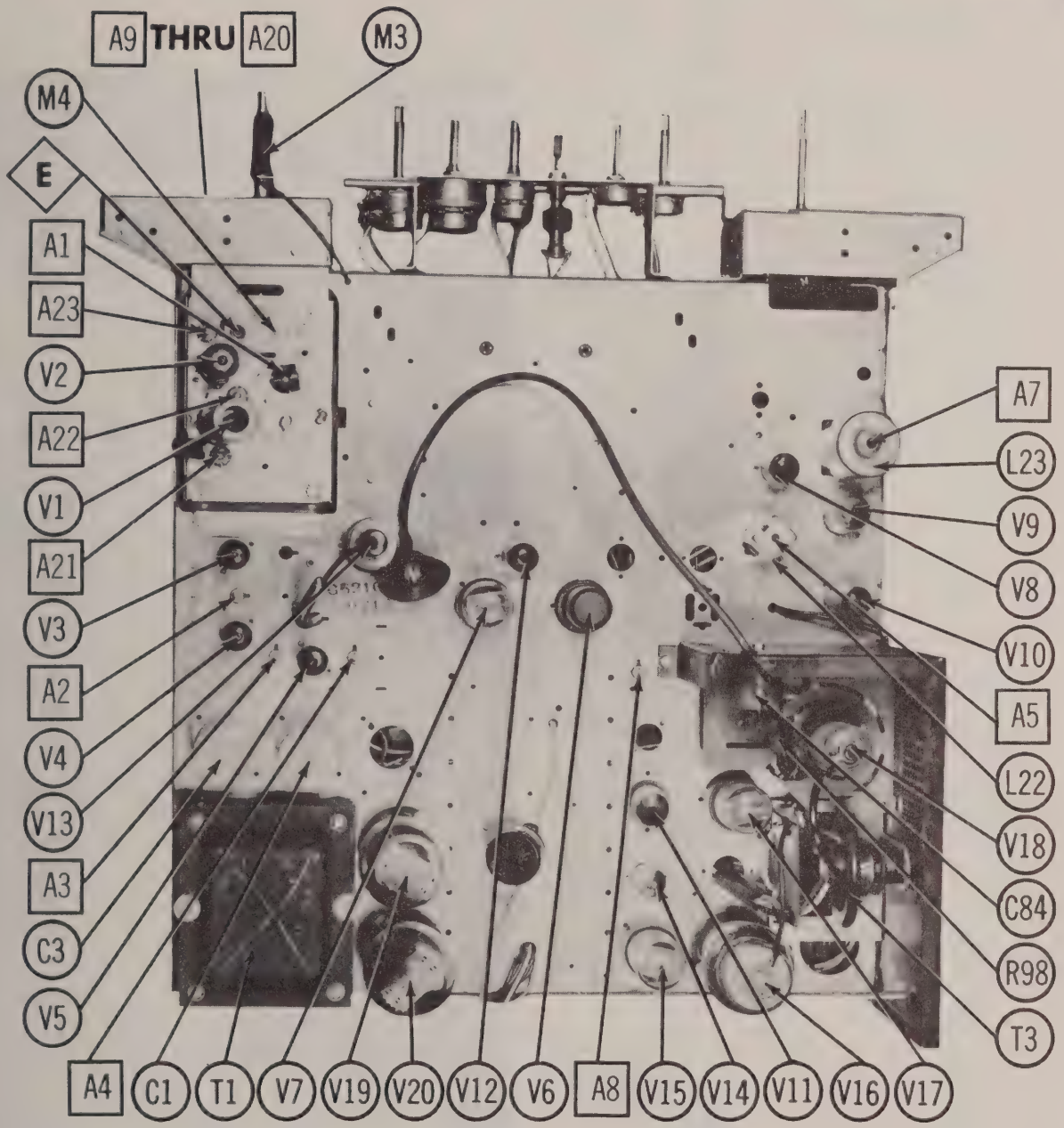
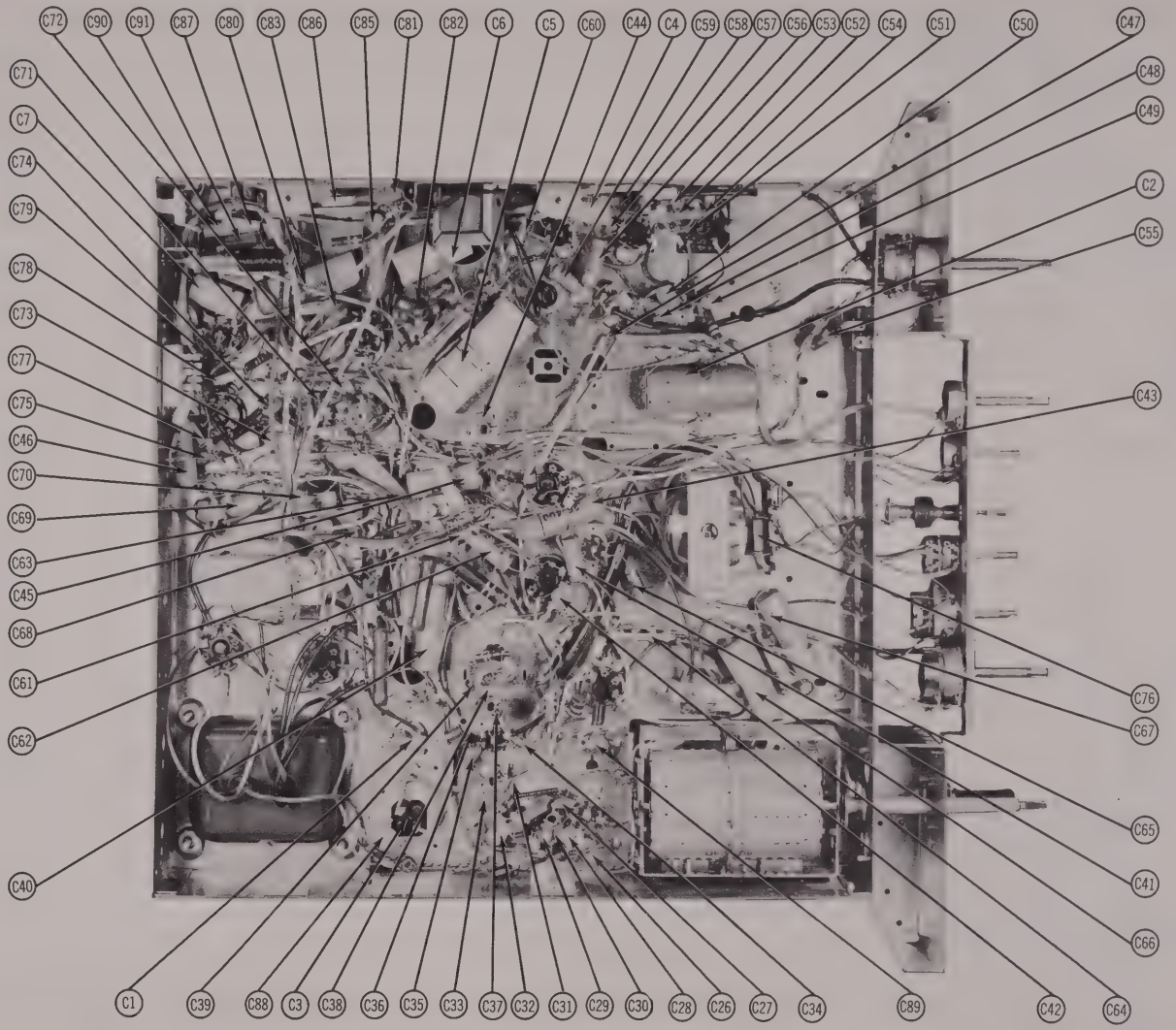


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

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TUBE PLACEMENT CHART

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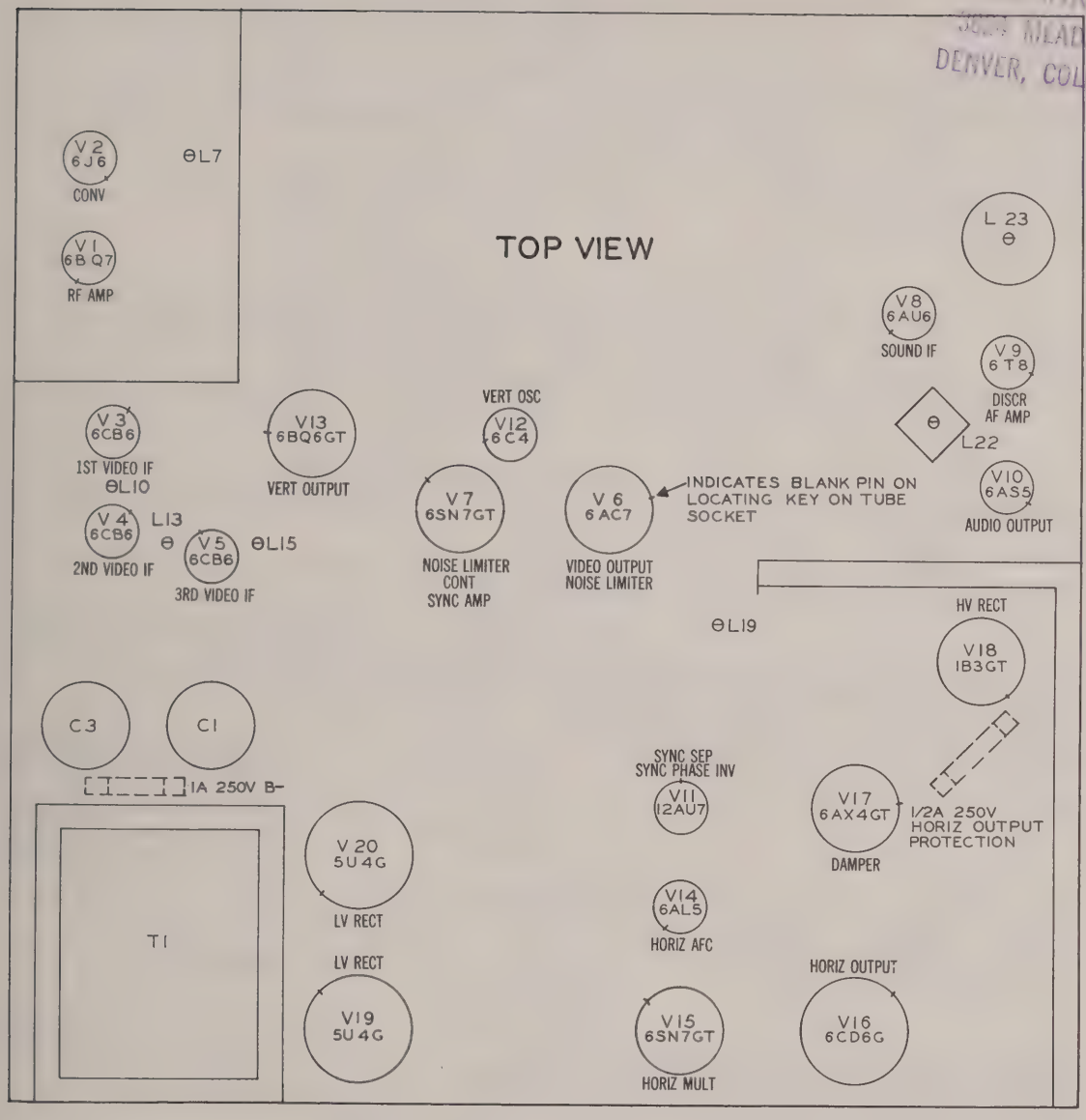

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V19, V20 Fuse (M1)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6, V10
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V21
Has pic, no sound -V8, V9, V10

SYNC FAILURE
No vert. sync -V11, V12
No horiz. sync -V11, V14, V15
No vert. or horiz. sync - V7, V11

SWEEP FAILURE
No raster, has sound - V15, V16, V17, V18, V21 Fuse (M2)
No vertical deflection -V12, V13
Poor vert. linearity or foldover - V12, V13
Poor horiz. linearity or foldover - V15, V16, V17
Narrow picture - V15, V16, V17, V18, V19, V20
Vert. off freq. -V11, V12
Horiz. off freq. - V11, V14, V15

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C40. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	23.5MC (Unmod)	Any	DC probe to point (A) Common to chassis.	A1, A2	Adjust for maximum deflection.
2.	"	"	25.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC Swp)	22.25MC 26.75MC	Any	Vert. amp to point (A) Low side to chassis.		Check for response similar to Fig.1. If necessary retouch A1 thru A4 for desired response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistor is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point (B) Common to chassis.	A5, A6	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to point (C) Common to point (D)	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. amp to point (B) Low side to chassis.	A5, A6	Disconnect stabilizer capacitor C4. Adjust for curve of maximum amplitude and symmetry as in Fig. 2.
5.	"	"	"	"	"	Vert. amp to point (C) Low side to chassis.	A7	Reconnect capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod)	Any	DC probe thru detector (Fig. 4) to pin 11 of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
The channel oscillator adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A) Low side to chassis.	A9	Adjust to place sound marker as shown in Fig. 5. Video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A10	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A11	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A12	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A13	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A14	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A15	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A16	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A17	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A18	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A19	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A20	

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RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection. The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp thru 10KΩ to point (E) Low side to chassis.	A21, A22, A23	Adjust for response curve similar to Fig. 6.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to Fig. 6. If markers fall below 70% on any channel make slight compromise adjustment of A21, A22, and A23 with channel switch turned to that channel. Recheck all tother channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

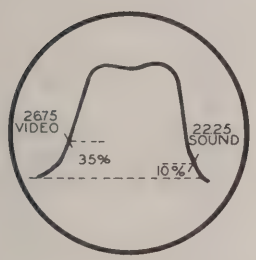


FIG. 1

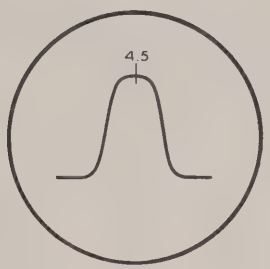


FIG. 2

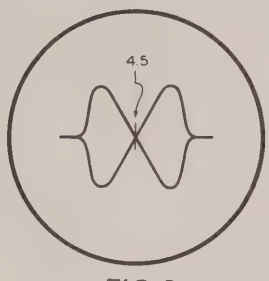


FIG. 3

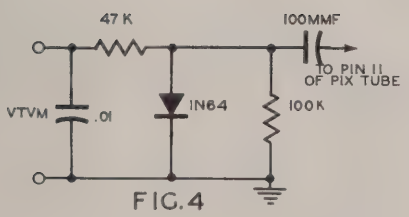


FIG. 4

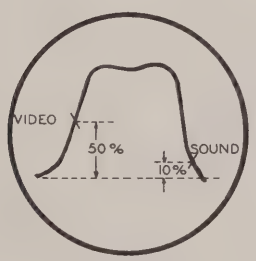


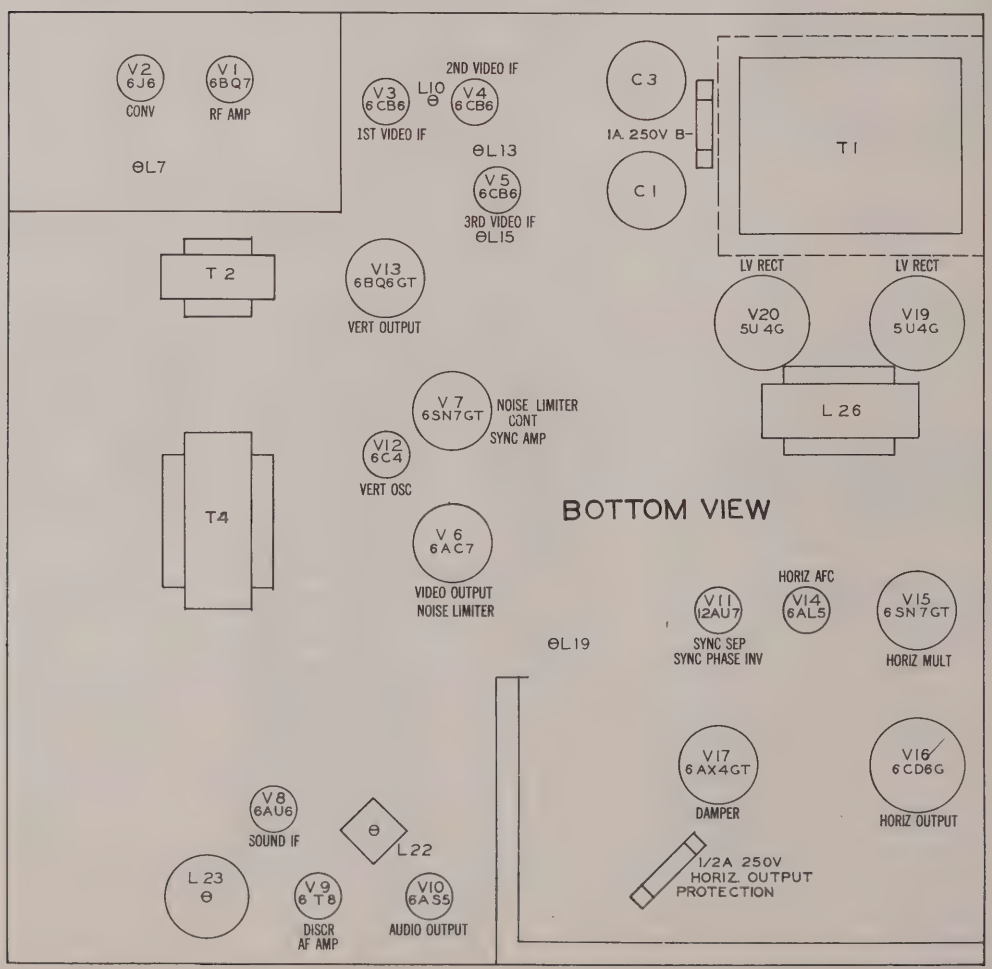
FIG. 5

FIG. 6

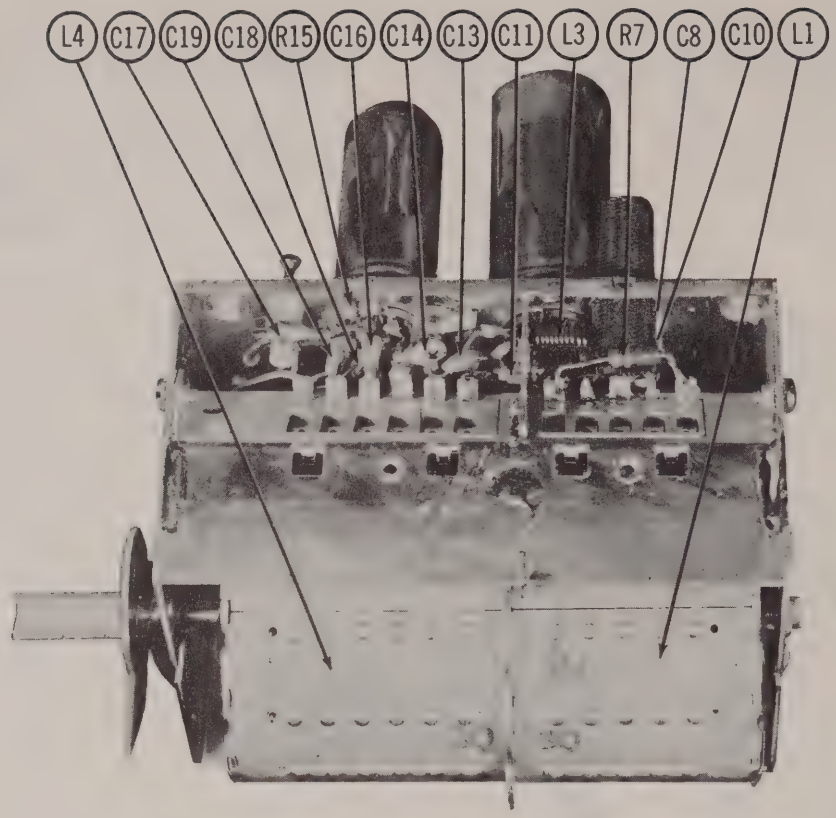
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7	INF	610KΩ	0Ω	.1Ω	0Ω	†6.2KΩ	120KΩ	INF	0Ω
V 2	6J6	‡10.3KΩ	‡300Ω	.1Ω	0Ω	230KΩ	10KΩ	0Ω		
V 3	6CB6	580KΩ	68Ω	.1Ω	0Ω	‡300Ω	‡300Ω	0Ω		
V 4	6CB6	576KΩ	47Ω	.1Ω	0Ω	‡200Ω	‡200Ω	0Ω		
V 5	6CB6	.2Ω	100Ω	.1Ω	0Ω	‡100Ω	‡100Ω	0Ω		
V 6	6AC7	0Ω	0Ω	20Ω	1 Meg	20Ω	†15KΩ	.1Ω	†4.7KΩ	
V 7	6SN7GT	568KΩ	†15KΩ	0Ω	2.2Meg	‡68KΩ	0Ω	0Ω	.1Ω	
V 8	6AU6	470KΩ	0Ω	.1Ω	0Ω	‡4.7KΩ	‡4.7KΩ	82Ω		
V 9	6T8	INF	22KΩ	INF	.1Ω	0Ω	0Ω	0Ω	10Meg	‡470KΩ
V 10	6AS5	40KΩ	370KΩ	.1Ω	0Ω	370KΩ	†673KΩ	†1.1KΩ		
V 11	12AU7	†680KΩ	‡0Ω	‡270KΩ	0Ω	0Ω	†12.1KΩ	†680KΩ	‡3.9KΩ	.1Ω
V 12	6C4	▲4.5Meg	INF	.1Ω	0Ω	▲4.5Meg	1.9Meg	0Ω		
V 13	6BQ6GT	INF	0Ω	INF	8.5KΩ	2.2Meg	INF	.1Ω	620Ω	Top Cap †873Ω
V 14	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 15	6SN7GT	5.1Meg	†3.4KΩ	1.5KΩ	100KΩ	†270KΩ	1.5KΩ	.1Ω	0Ω	
V 16	6CD6G	150Ω	.1Ω	150Ω	†8.4KΩ	470KΩ	470KΩ	0Ω	†8.4KΩ	Top Cap ▲8Ω
V 17	6AX4GT	▲15Ω	▲16Ω	550KΩ	▲100KΩ	†340Ω	INF	▲12Ω	▲12Ω	
V 18	1B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap ▲368Ω
V 19	5U4G	INF	30KΩ	INF	20Ω	INF	21Ω	INF	30KΩ	
V 20	5U4G	INF	30KΩ	INF	20Ω	.1Ω	21Ω	INF	30KΩ	
V 21	27NP4	0Ω	‡45KΩ	Pin 10 ▲33KΩ	Pin 11 235KΩ	Pin 12 .1Ω				

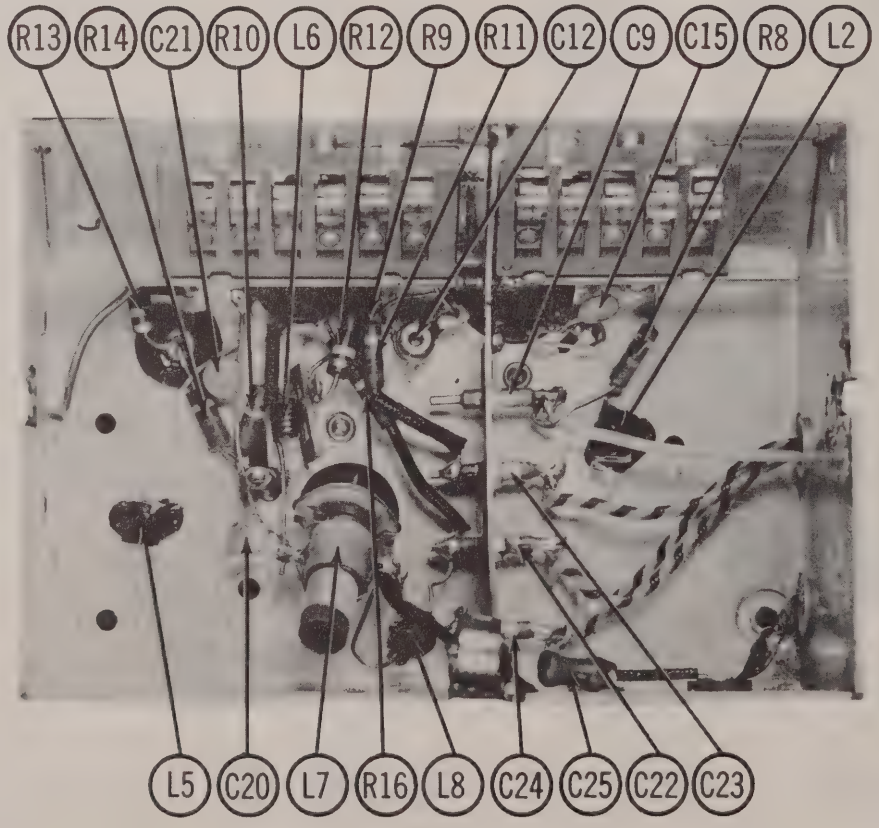
▲ MEASURED FROM PIN 3 OF V17.
‡ MEASURED FROM PIN 1 OF V10.
† MEASURED FROM PIN 8 OF V19 & V20.



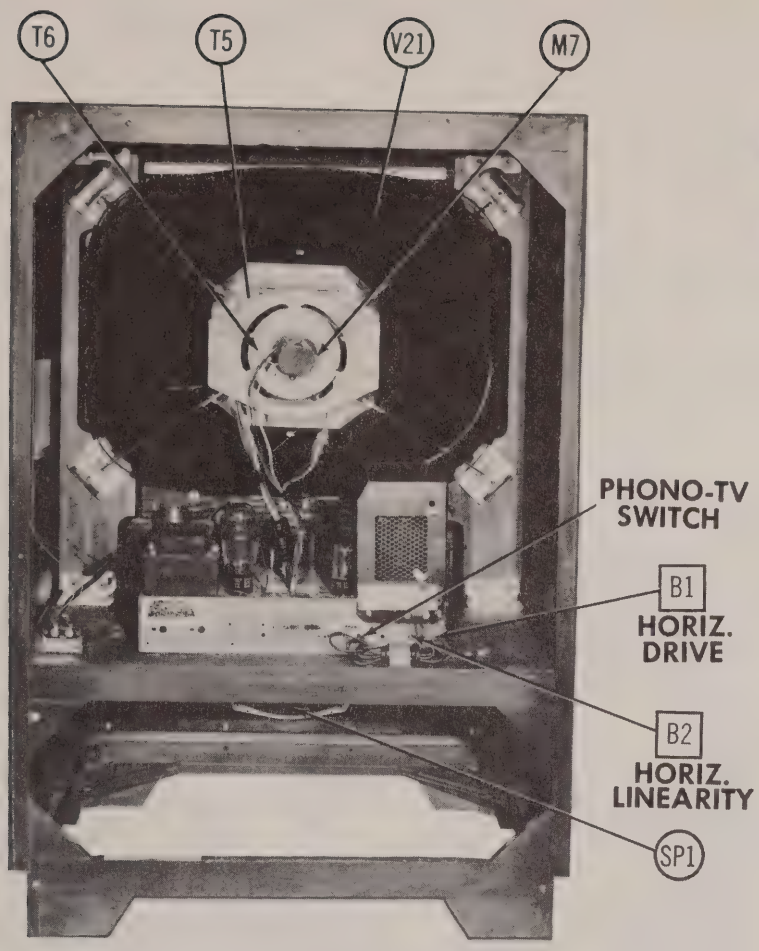
TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



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CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal hold until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer (B1) counter clockwise as far as possible without the presence of vertical white lines or compression of the center of the picture.

Adjust the horizontal linearity slug (B2) for a picture that is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Check horizontal deflection yoke for open. Check C85 for open. Check C87.

INSUFFICIENT SWEEP

Check setting of horizontal drive, B1, and horizontal linearity, B2. Substitute V15, V16 and V17. Check V19 and V20 by substitution. Check waveform at W14.

If Satisfactory	If Unsatisfactory
Check C82, C83, T3, C80, R91 and R92. Check other associated components.	Check C78, C79, and other components associated with the horizontal oscillator and coupling network.

DRIVE LINES

Check setting of drive control, B1.
Substitute V16 and V17. Check C82 and C83 for open.

COMPRESSED LEFT SIDE

Substitute V16 and V17. Check T3 and associated circuit components.

FOLDS

Substitute V16 and V17. Check T3, C82, C83 and C85.
Check horizontal deflection yoke.

XMAS TREE EFFECT

Check L25 for short and C76 for open.

VERTICAL

LOSS OF SWEEP

Substitute V12 and V13. Check waveform at W8.

If Satisfactory	If Unsatisfactory
Check T4, C68, C1C, C3B and vertical deflection yoke.	Check T2, C67, C65 and other associated components.

INSUFFICIENT SWEEP

Substitute V12 and V13. Proceed as outlined under "LOSS OF SWEEP".

COMPRESSED AT BOTTOM

Substitute V12 and V13. Check C67 for leaky condition. Check C3B for open.

COMPRESSED AT TOP STRETCHED AT BOTTOM

If adjustment of height and vertical linearity controls do not correct this condition, check C66.

FOLDS

Substitute V12 and V13. Check C3B.

SYNC

HORIZONTAL

LOSS OF SYNC

Substitute V14 and V15. Check C73, C74, C75, C71, C72 and other associated components. Check C81.

CRITICAL SYNC

Substitute V14 and V15. Proceed as outlined under "LOSS OF SYNC".

PULLING PICTURE

Substitute V15. Check C74 and C75. Check other associated circuit components.

VERTICAL

LOSS OF SYNC

Substitute V12. Check C65 and vertical integrator network.
Check components associated with V12.

CRITICAL SYNC

Substitute V7, V11 and V12. Proceed as outlined under "LOSS OF SYNC".

TRIGGERING

Substitute V12, V11 and V7. Check circuits near these tubes for filament lead dress.

VIDEO

LOSS OF VIDEO

Substitute V6 and V7. Check video detector diode, M5. Check C41, C45 and and other associated components. Check picture tube.

SOUND BARS

Check adjustment of local oscillator. Check 4.5MC trap adjustment, A8

POOR RESOLUTION

Substitute RF tuner, video IF and video amplifier tubes. Check video IF alignment. Check components of the video IF stage.

SMEAR

Substitute V6. Check video detector, M5. Check C41 and C45 for leakage. Check L20 for open. Check R33, R34, R35, R36, R31 and R6 for change of value. Check picture tube.

POOR CONTRAST

Substitute V6. Check video detector crystal, M5. Check video components. Check picture tube.

ONE WIDE BLACK BAR ACROSS PICTURE

Check RF tuner, video IF and video amplifier tubes for heater to cathode leakage and filament lead dress.

AUDIO

WEAK OR NO SOUND

Substitute V8, V9 and V10. Check circuit of V9B and V10 by shorting pin 8 of V9 to chassis a loud noise should result.

If Satisfactory	If Unsatisfactory
Check alignment of audio IF and discriminator, A5, A6 and A7.	Check components associated with V9 and V10.

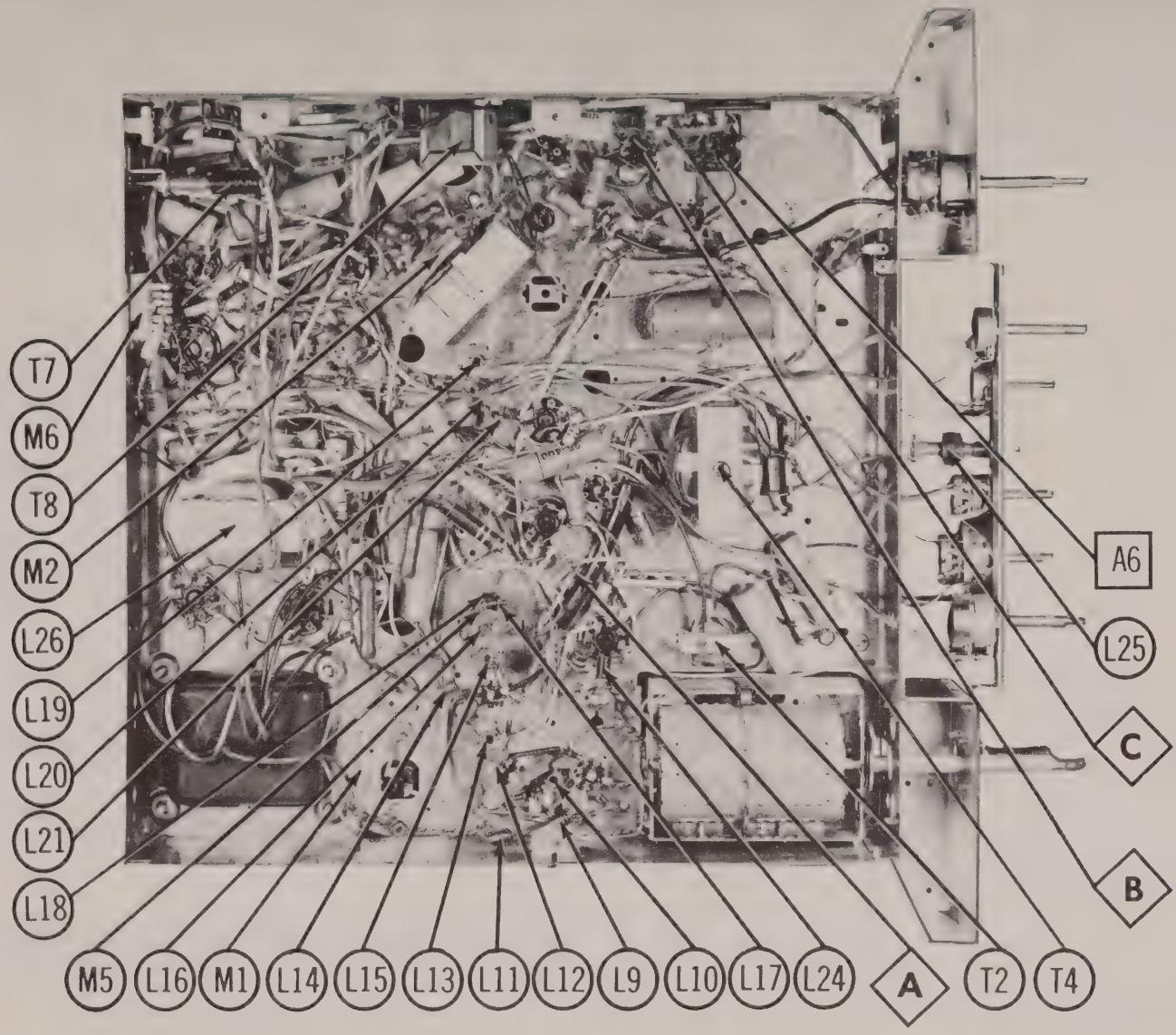
BUZZ

Check adjustment of local oscillator. Align sound IF and discriminator, A5, A6 and A7. If buzz is still present substitute V9 and readjust A6 and A7. Check C4 and C51.

DISTORTED

Check audio stages V9 and V10 using audio signal generator.

If Distorted	If Undistorted
Substitute V9 and V10. Check associated circuit components.	Check alignment of sound IF and discriminator A5, A6 and A7.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

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3924 MEADE ST.
DENVER, COLORADO

PROPERTY OF
L. F. CLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE
V1A	RF Amplifier	6BQ7	6BQ7	9AJ
B	RF Amplifier	6BZ7	6BZ7	9AJ
V2	Converter	6J8	6J8	T8F
V3	1st. Video IF Amp.	6CB6	6CB6	7CM
V4	2nd. Video IF Amp.	6CB6	6CB6	7CM
V5	3rd. Video IF Amp.	6CB6	6CB6	7CM
V6	Video Output- Noise Limiter	6AC7	6AC7	8N
V7	Noise Limiter - Control-Sync Amplifier	6BN7GT	6BN7GT	8BD
V8	Sound IF Amp.	6AU6	6AU6	T8K
V9	Discriminator- AF Amplifier	6T8	6T8	8E
V10	Audio Output	6AB5	6AB5	7CV
V11	Sync Separator- Sync Phase Inv.	12AU7	12AU7	9A
V12	Vert. Oscillator	6C4	6C4	5BG
V13	Vert. Output	6BQ6GT	6BQ6GT	6AM
V14	Horiz. AFC	6AL5	6AL5	6BT
V15	Horiz. Mult.	6BN7GT	6BN7GT	8BD
V16	Horiz. Output	6CD6G	6CD6GT	5BT
V17	Damper	6AX4GT	6AX4GT	4CG
V18	HV Rectifier	1B3GT	1B3GT	5C
V19	LV Rectifier	5U4G	5U4G	5T
V20	LV Rectifier	5U4G	5U4G	5T

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V21	27NP4	27EP4 ①②	27EP4 ① ②	27EP4①② 27GP4 ①		12M 12D 12D	① Circuit changes necessary. ② 1/16" longer

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	450	509001	AFH3-43		CO34		FP378.8	TVL-3785	
B	▲40	450								
C	▲10	450								
C2	40	300	180096	PR8450/40		BR4035		TC78	TVA-161	
C3A	▲80	350	509002	AFH3-143		BO80		FP375	TVL-1630	
B	▲100	50							TVA-1310	
C4	10	150	506174	PR8350/10		BR1015		TC43	TVA-1406	
C5	10	600	506690	PR8600/10		BR1VE10		TC98	TVA-1955	
C6	10	450	161034	PR8450/10		BR1045A		TC72	TVA-1705	
C7	4	150	530921	PR8150/4		BR415		TC40	TVA-1402	
C8	3-8		509064		829-10					
C9	800			EF-001	MFT-1000				503C-D1	
C10	3.6		530721				NP0K-3R6			
C11	800			EF-001	MFT-1000				503C-D1	
C12	.5-3		507968		829-3		CT65A			
C13	1.5		530720	SEI,SNP0	TCZ-1.5	2004	NP0K-1R5	ZT-5515	5TCCB-V15	
C14	47		530719	SI47	D8-470	G033	GP1K-470	UC-5447	5CA-Q47	
C15	1000		530735							
C16	47		530719							
C17	3-8		507968		829-3		3115-01-0R5	CT65A		
C18	10		530718	SL0N0P0	TCZ-10	2018	NP0K-100	ZT-541	5TCC-Q1	
C19	8		530717	SI5N750	TCN-5	N011	N750K-050	NT-555	5TCUB-V5	
C20	6.8		530716	SI8.2N0P	TCZ-6.8	Z013	NP0K-0R8	ZT-5568	5TCCB-V68	
C21	1000		530735	BPD-001	DD-102	E069	B01-001	DC-531	5HK-D1	
C22	800			EF-001	MFT-1000				503C-D1	
C23	800			EF-001	MFT-1000				503C-D1	
C24	800			EF-001	MFT-1000				503C-D1	
C25	130		513029	SI2N0T50	TCN-120	M044	N750L-121	NT-5312	5TCU-T12	
C26	5000		513013	BPD-001	DD-502	K080	B11-005	DC-535	5HK-D5	
C27	5000		513013	BPD-005	DD-502	K080	B11-005	DC-535	5HK-D5	
C28	5000		513013	BPD-005	DD-502	K080	B11-005	DC-535	5HK-D5	
C29	83		513016	SI83	D8-820	G040	GP1K-820		5CA-Q82	
C30	5000		513013	BPD-005	DD-502	K080	B11-005	DC-535	5HK-D5	
C31	5000		513013	BPD-005	DD-502	K080	B11-005	DC-535	5HK-D5	
C32	5000		513013	BPD-005	DD-502	K080	B11-005	DC-535	5HK-D5	
C33	83		513016	SI83	D8-820	G040	GP1K-820		5CA-Q82	
C34	5000		513013	BPD-005	D8-820	K080	B11-005	DC-535	5HK-D5	
C35	5000		513013	BPD-005	D8-820	K080	B11-005	DC-535	5HK-D5	
C36	5000		513013	BPD-005	D8-820	K080	B11-005	DC-535	5HK-D5	
C37	5		513432	SI5NP0	TCZ-4,7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C38	83		513016	SI83	D8-820	G040	GP1K-820		5CA-Q82	
C39	5		513432	SI5NP0	TCZ-4,7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C40	.25	200	512045	P488-25		CUB3P25		PT4025	2TM-P25	
C41	.1	300	512033	P588-1	DF-104	CUB4P1		PT401	4TM-P1	
C43	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C43	.25	400	512323	P488-25		CUB4P25		PT4025	4TM-P25	
C44	47		513438	SI47NP0	TCZ-47	Y233	NP0L-470	ZT-545	5TCC-Q47	
C45	.1	400	512035	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C48	.05	600	512031	P588-05	DF-503	CUB655		PT615	6TM-S5	
C47	3.3		513001	SL2.2N0P	TCZ-3.3	Y205	NP0K-2R3		5TCCB-V22	
C48	47		513063	SI47N330			N330K-470			
C49	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C50	5000		513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C51	1500		513010	811500	DD-152	TP54	801-0015	DC-5215	5HK-D15	
C52	1500		513010	811500	DD-152	TP54	801-0015	DC-5215	5HK-D15	
C53	1500		513010	811500	DD-152	TP54	801-0015	DC-5215	5HK-D15	
C54	.05	200	512027	P288-05	DF-503	CUB285		PT415	2TM-S5	
C55	.005	600	512007	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C56	.005	600	512007	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C57	270		513006	SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C58	.01	400	512011	P488-01	D6-103	CUB481	GP2-333-103	PT611	4TM-S1	
C59	.01	200	512009	P488-01	D6-103	CUB481	GP2-333-103	PT611	4TM-S1	
C60	.005	600	512007	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	270		513006	SI270	D6-271	TP41	GP2K-271	UC-5327	5GA-T27	
C62	.01	600	512013	P688-01	D6-103	CUB681	GP2-333-103	PT611	6TM-S1	
C63	.05	400	512029	P488-05	DF-503	CUB485		PT415	4TM-S5	
C64A	.01							PT611		
B	.002		▲508062	†PA-110	†PC-100	†ST1MI	▲ M05-01	PT632	†101C1	
C	.005			BPD-01	DD-103	†K082	B11-01	PT625	5HK-B1	
D	.005							PT625		
C65	.005	600	512007	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C66	.1	600	512037	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C67	.1	600	512037	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C68	.05	200	512031	P288-05	DF-503	CUB285		PT415	2TM-S5	
C69	.05	600	512031	P688-05	DF-503	CUB685		PT615	6TM-S5	
C70	.02	600	512019	P688-02	DD-203	CUB682		PT612	6TM-S2	
C71	.001	600	512001	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C72	.001	600	512001	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C73	.01	200	512009	P488-01	D6-103	CUB481	GP2-333-103	PT611	4TM-S1	
C74	5000		513013	BPD-005	MD-502	K080	811-005	DC-525	5HK-D5	
C75	.05	200	512027	P288-05	DF-503	CUB285		PT415	2TM-S5	
C76	3900	500	512540	1454-004		1R5D39		MCB463	MS-34	
C77	390	500	512535	1469-0004		5R5T39		MCB243	MS-34	
C78	390	500	512535	1469-0004		5R5T39		MCB243	MS-34	
C79	1000	500	512515	1464-001		1R5D1		MCB255	MS-21	
C80	.25	600	512049	584-25		CUB6P25		PT6025	6TM-P25	
C81	.005	600	512007	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C82	.05	600	512031	P688-05	DF-503	CUB685		PT615	6TM-S5	
C83	.05	600	512031	P688-05	DF-503	CUB685		PT615	6TM-S5	
C84	500	2000	508888	HV2GB	TV4-502	MMU-20T5	413	HV20035A	20DK-T5	
C85	.25	400	512323	P488-25		CUB4P25		PT4025	4TM-P25	
C86	130	2000	512546							
C87	130	2000	512546							
C88	5000		513013	BPD-005	MD-502	K080	811-005	DC-525	5HK-D5	
C89	83		513016	SI83	D8-820	G040	GP1K-820		5CA-Q82	
C90	.01	600	512255	689ZX-01		CUB681		PT611	6TM-S1	
C91	.01	600	512255	689ZX-01		CUB681		PT611	6TM-S1	

♦ Items C64A, C64B, C64C, C64D, R62A, R62B, R62C are combined in one unit.
† To replace original unit, install .01MFD unit in series with C-R unit input lead.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	2	530292	QJ-341 *	RTV-389		WF751	Contrast-wire wound-panel
B	1Meg	1					UR16T25 †	Volume-tapped ①200KΩ-rear
C	Switch						US-26	Attach to R1B
R2A	500K †	1	520748	Q11-133	AG-58-8	AB-59	U-50	Tone
B	Shaft		Not Reg.	Not Reg.	KS8-3	AK-4	Not Reg.	Attach to R2A
R3A	100K(Ω)	1	509893	Q11-136	AG-49-8	AB-40	U-41	Brightness
B	Shaft		Not Reg.	Not Reg.	RS-3/16	AK-4	Not Reg.	Attach to R3A
R4A	2.5Meg		508898	QJ-323 **	RTV-313		UF255L	Height-Panel
B	1Meg						UR16L	Vert.Hold-Rear
R5A	10KΩ	4	509302		RTV-341			Focus-wire wound-panel
B	5000Ω							Vert. Linearity-rear
R6A	30KΩ		520745	Q11-121				Power Booster
B	20KΩ			Mil-121				

* CONCENTRIKIT EQUIVALENT- KIT K-3, BASE ELEMENTS & SHAFTS W17-105 & P3-131 (Panel)
B13-137X & R1-226 (Rear) & SWITCH 76-1.
** CONCENTRIKIT EQUIVALENT- KIT K-2, BASE ELEMENTS & SHAFTS B11-239 & P1-112 (Panel)
† Universal Replacement (Mallory exact duplicate part #UE23WS).

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R7	15KΩ	1			
R8	47KΩ	1		BTS-47K	
R9	100KΩ	1			
R10	160KΩ 5%	1		BTS-160K 5%	
R11	1500Ω	1		BTS-1500	
R12	100KΩ 5%	1			
R13	10KΩ	1			
R14	220KΩ	1			
R15	10KΩ	1		BTS-10K	
R16	15KΩ	1		BTS-15K	
R17	47KΩ 5%	1	510723		
R18	68Ω	1	510116	BTS-68	
R19	390Ω	1	510129	BTS-390	
R20	820Ω	1	510153		
R21	47Ω	1	510112	BTS-47	
R22	100Ω	1	510119	BTS-100	
R23	15000Ω	1	510159		Note 1
R24	100Ω	1	510118	BTS-100	
R25	100Ω	1	510119	BTS-100	
R26	100Ω	1	510118	BTS-100	
R27	18KΩ	1	510159	BTS-18K	
R28	82000Ω	1	510153	BTS-8200	
R29	5820Ω	1	510164	BTS-5820	
R30	1Meg	1	510181	BTS-1Meg	
R31	10KΩ	1	510354	BTS-10K	
R32	12KΩ 5%	1	510723	BTS-12K 5%	
R33	10KΩ	1	510154	BTS-10K	
R34	4000Ω	1	510753		
R35	470KΩ	1	510184	BTS-470K	
R36	470KΩ	1	510184	BTS-470K	
R37	22KΩ	1	510160	BTS-22K	
R38	33KΩ	1	510164	BTS-33K	
R39	2200Ω	1	510142	BTS-2200	
R40	18KΩ	1	510149	BTS-18K	
R41	470KΩ	1	510184		
R42	82Ω	1	510117	BTS-82	
R43	4700Ω	1	510249	BTA-4700	
R44	220Ω	1	510124	BTS-220	
R45	18KΩ	1	510159	BTS-18K	
R46	220Ω	1	510124	BTS-220	
R47	22KΩ	1	510160	BTS-22K	
R48	680KΩ	1	510170	BTS-68K	
R49	10Meg	1	510197	BTS-10Meg	
R50	470KΩ	1	510184	BTS-470K	
R51	680KΩ	1	510746	BTS-680K	
R52	820KΩ 5%	1	510747	BTS-820K 5%	
R53	270KΩ	1	510180	BTS-270K	
R54	2.2Meg	1	510183	BTS-2.2Meg	
R55	68KΩ	1	510189	BTS-68K	
R56	270KΩ	1	510180	BTS-270K	
R57	680KΩ	1	510187	BTS-680K	
R58	3900Ω 5%	1	510748	BTS-3900 5%	
R59	6800Ω	1	510181	BTS-6800	
R60	4700Ω 5%	1	510750	BTS-4700 5%	
R61	27KΩ	1	510182	BTS-27K	
R62A	22KΩ	1		BTS-22K	
B	8200Ω	1	♦508062	BTS-8200	
C	8200Ω	1		BTS-8200	
R63	1.2Meg 5%	1	510777	BTS-1.2Meg5%	
R64	2.7Meg 5%	1	510772	BTS-2.7Meg 5%	
R65	680Ω	1	510154	BTS-680	
R66	2.2Meg	1	510193	BTS-2.2Meg	
R67	270Ω	1	510126	BTS-270	
R68	12KΩ	2	510356	BTB-12K	
R69	12KΩ	2	510356	BTB-12K	
R70	10KΩ	1	510254	BTS-10K	
R71	560Ω	1	510132	BTS-560	
R72	560Ω	1	510132	BTS-560	
R73	1000Ω	1		BTA-1000	
R74	27KΩ	1	510182	BTS-27K	
R75	6800Ω	1		BTS-6800	
R76	15KΩ	1		BTA-15K	Note 4
R77	100K ‡ 5%	1	510751	BTS-100K 5%	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R78	100K ‡ 5%	1	510751	BTS-100K 5%	
R79	4.7Meg	1	510195	BTS-4.7Meg	
R80	470KΩ	1	510184	BTS-470K	
R81	1500Ω	1	510130	BTS-1500	
R82	3300Ω	1	510145	BTS-3300	
R83	100KΩ	1	510172	BTS-100K	
R84	270KΩ	1	510180	BTS-270K	
R85	56000Ω 5%	1		BTA-5600 5%	Note 2
R86	470KΩ	1	510184	BTS-470K	
R87	1MΩ	1	510219		
R88	330Ω	2	510327	BW-2-330	
R89	270Ω	2	510320	BW-2-270	
R90	47Ω	1	510112		
R91	4000Ω	3	510773	1 3/4A-4000	
R92	4000Ω	3	510773	1 3/4A-4000	
R93	330Ω	10	510757	1 3/4A-350	
R94	100KΩ	1	510766	BTS-100K	
R95	600Ω	10	510741	1 3/4A-600	
R96	4000Ω	3	510773	1 3/4A-4000	
R97	220KΩ	1		BTS-220K	Note 3
R98	1Meg	1			

Note 1. Chassis not containing a "B" in series designation use a 4700Ω resistor in this application.
Note 2. Some Models may use a 4700Ω resistor in this application.
Note 3. Some Models may use a 200KΩ resistor in this application.
Note 4. Some Models may use a single 22KΩ resistor in this application.
♦ Items R62A, R62B, R62C, C64A, C64B, C64C, C64D are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ▲2.5A	650VCT .300ADC	5VAC @6A	521156	P-8184① ②				P9737②	
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC ▲1.2A	6.3VAC ▲9.7A								

① Drill new mounting holes.
② Parallel the two 6.3V-5A winding for Sec. 4.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T2	Vert. Osc. Trans.	508076	A-8125	A-3003	A-97X	209T1 ①	B8703	34A87①
T3	Horiz.Output Trans.	512545		D-50	235T1			FLY-16
T4	Vert. Output Trans.	509875	A-8115②③	A-3035②	A-107X① ②	204T2②③	21B00③	34886③④
T5A	Yoke (90°) -Horiz.(12MH)	1153U①		MDF-90②	Y-50-1	213D1⑤		Y-14
B	Yoke (90°) -Vert. (44MH)							
T6	Focus Coil	162326⑥						
T7	Horiz.Lin. Coil (1.3-10MH)	520913	WC-8	MWC-4⑦	WC-12②	213R1		WC-17
		521336 ⑥						

① Drill one new mounting hole.
② Drill new mounting holes.
③ Connect as auto transformers.
④ Includes cable and plug.
⑤ Use original yoke network.
⑥ Slug for fore to horizontal lin. coil
⑦ Enlarge mounting hole.
⑧ Connect to coded blue and red terminals.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI	IMPEDANCE: SEC	REPLACEMENT DATA: TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T8	6.3KΩ	3.5Ω	509376	A-3877	A-2930	S-5X	Z1901	24S51	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6 x 9"	PM	3.5Ω	506174	ST-810 Mod. P69-V	68A2	

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1A	Ant. Coil	0Ω CT	0Ω	520702				Channel 2
B	Ant. Coil	0Ω CT	0Ω	520703				Channel 3
C	Ant. Coil	0Ω CT	0Ω	520704				Channel 4
D	Ant. Coil	0Ω CT	0Ω	520705				Channel 5
E	Ant. Coil	0Ω CT	0Ω	520706				Channel 6
F	Ant. Coil	0Ω CT	0Ω	520707				Channel 7
G	Ant. Coil	0Ω CT	0Ω	520708				Channel 8
H	Ant. Coil	0Ω CT	0Ω	520709				Channel 9
I	Ant. Coil	0Ω CT	0Ω	520710				Channel 10
J	Ant. Coil	0Ω CT	0Ω	520711				Channel 11
K	Ant. Coil	0Ω CT	0Ω	520712				Channel 12
L	Ant. Coil	0Ω CT	0Ω	520713				Channel 13
L2	Fil. Choke	0Ω		520518				
L3	Neutr.Coil	0Ω		520701				
L4A	RF, Mixer Grid & Osc. Coil	0Ω	0Ω	520722				Channel 2
B	RF, Mixer Grid & Osc. Coil	0Ω	0Ω	520723				Channel 3
C	RF, Mixer Grid & Osc. Coil	0Ω	0Ω	520724				Channel 4
D	RF, Mixer Grid & Osc. Coil	0Ω	0Ω	520725				Channel 5

TRUETONE
MODEL 2D1358A

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
E	RF, Mixer Grid & Osc. Coil	0Ω		520726				Channel 6
F	RF, Mixer Grid & Osc. Coil	0Ω		520727				Channel 7
G	RF, Mixer Grid & Osc. Coil	0Ω		520728				Channel 8
H	RF, Mixer Grid & Osc. Coil	0Ω		520729				Channel 9
I	RF, Mixer Grid & Osc. Coil	0Ω		520730				Channel 10
J	RF, Mixer Grid & Osc. Coil	0Ω		520731				Channel 11
K	RF, Mixer Grid & Osc. Coil	0Ω		520732				Channel 12
L	RF, Mixer Grid & Osc. Coil	0Ω		520733				Channel 13
L5	Fil. Choke	0Ω		520520				
L6	RF Choke	0Ω		520714				
L7	1st. Video IF	.8Ω		520734	17-1004	TV-103 *	6189 *	Includes core, core part #509062
L8	RF Choke	1.2Ω		520715				
L9	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L10	2nd. Video IF	.2Ω		507343	17-1004	TV-103 *	6189 *	Less core, core part #507357
L11	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L12	RF Choke	2.4Ω		507367			4626	23 Microhenries
L13	3rd. Video IF	.2Ω		507343	17-1003	TV-102 *	6188 *	Less core, core part #507357
L14	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L15	4th. Video IF	.2Ω		507343	17-1004	TV-103 *	6189 *	Less core, core part #507357
L16	RF Choke	3.4Ω		507367			4626	23 Microhenries
L17	Series Peaking Coil	8.2Ω		520620	19-3180	TV-184	6180	180 Microhenries
L18	Shunt Peaking Coil	20Ω		520985	19-3660		4650	650 Microhenries
L19	4.5MC Trap	2Ω		509603	20-1004	TV-151	1470	Includes core, core part #507357, Stewart-Warner part # also includes C44
L20	Series Peaking Coil	9Ω		520689	19-3180	TV-184	6180	180 Microhenries
L21	Shunt Peaking Coil	14.5Ω		509342	19-1923	TV-188	4648	394 Microhenries
L22	Sound IF	1.2Ω		509378			1470 A	
L23	Ratio Det.	4Ω	.8Ω CT	509706		TV-115 †	6205 †	Tertiary Winding -.4Ω
L24	Fil. Choke	0Ω		507584			4604	1.5 Microhenries
L25	Horiz. Osc.	80Ω		508967	19-1576	TV-163	6210	Includes core, core part #508963

† Use adaptor plate.
* Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L26	.300ADC	73Ω	2.9 Hy.	508341	C-2326①			C5037①	26C44 ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA TRUETONE PART No. FUSE	TRUETONE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG-P/T	1A Ⓐ 250V	509517		318001		GJV-1	
M2A	3AG-P/T	1/2 A Ⓐ 250V	521381		318.500		GJV-1/2	
B	3AG-P/T	1/4A Ⓐ 250V	508063		318.250		GJV-1/4	

* Used in chassis not bearing "Series C" designation.

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Dial Light	118921	Type No. 47 8V, 150MA
M4	RF Tuner	520645	
M5	Crystal	509386	Video Detector
M6	Switch	520563	Phono-TV
M7	Ion Trap Magnet	508603	
	Trimmer Capacitor	520127	25-280MMF, Horiz. Drive Control
	Cabinet	520850-A	
	Cabinet Back	115313	
	Safety Glass	520867	
	Mask	520866-B	Pix Tube (Green)
	Knob	521174	Channel Selector (Maroon)
	Knob	509019	Contrast
	Knob	509017	Fine Tuning
	Knob	520831	Off-On Volume (Maroon)
	Knob	520740-B	Tone or Power Boost (Maroon)

TROUBLE SHOOTING AIDS (CONT.)

PROPERTY OF
L. F BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Substitute V15, V16, V17 and V18. Check waveform at W14.

If Satisfactory	If Unsatisfactory
Check C82, C83, C84 and C85. Check T3, R98, yoke and other associated components.	Check C78, C79, Horizontal drive and other associated components.

INSUFFICIENT HIGH VOLTAGE

Substitute V15, V16, V17, V18, V19 and V20. Proceed as outlined under "LOSS OF HIGH VOLTAGE".

BLOOMING

Substitute V17 and V18. Check R98, C84, T3 and other associated components. Check picture tube.

POWER

SMALL AND / OR DIM RASTER

Substitute V19 and V20. Check B+ filter capacitors and network. Proceed as outlined under "HORIZONTAL LOSS OF SWEEP".

DIM PICTURE WEAK SOUND

Substitute V19 and V20. Check B+ capacitors and filter network.

GENERAL

RASTER NO SOUND NO PICTURE

Substitute V1, V2, V3, V4, V5, V6 and V7. Check video detector crystal M5. Check video IF components.

RASTER SNOWY PICTURE WEAK SOUND

Substitute V1, V3, V4 and V5. Check video detector crystal, M5. This condition may be caused by two or more of the video IF and RF amplifier tubes being weak. This condition will be more noticeable in strong signal areas. In weak signal areas there would probably be a total loss of video and sound.

RASTER SOUND NO PICTURE

See "LOSS OF VIDEO".

TOTAL LOSS OF SYNC

Substitute V7 and V11. Check C62, C63 and other components associated with V7 and V11.

POOR FOCUS

Check adjustment of Focus control. Substitute V19 and V20 and readjust focus control. Check focus coil, T6. Check picture tube.

SET DEAD

Check fuse, M1. Check jumper connections at deflection yoke plug. Check AC interlock assembly. Check T1.

Symptoms shown above are assumed and are not indicative of the quality and workmanship of this receiving equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the RF Tuner Oscillator Circuit may be accomplished by removal of the channel selector and fine tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the channel selector shaft.

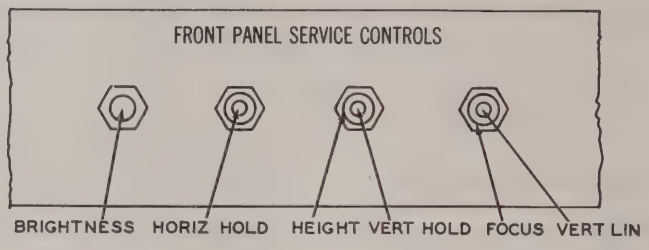
PICTURE TUBE SAFETY GLASS CLEANING

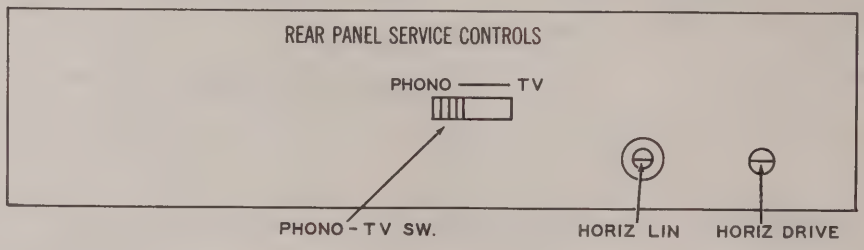
Remove 4 brass wood screws at top of cabinet. Remove brass trip and tilt safety glass forward, and lift out. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION





SPECIAL ADJUSTMENTS

Tune to a strong TV signal. Adjust brightness and contrast controls for normal viewing.

Starting from maximum counter clockwise position, adjust power booster control in clockwise direction until picture becomes unstable, then reverse the adjustment just enough to eliminate the instability or bending of the picture.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjust horizontal hold until receiver synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L23) located on top of chassis. (See tube placement chart).

FUSES

Two fuses are used. One for horizontal sweep circuit protection and one for LV power supply protection. (For location, see tube placement chart).

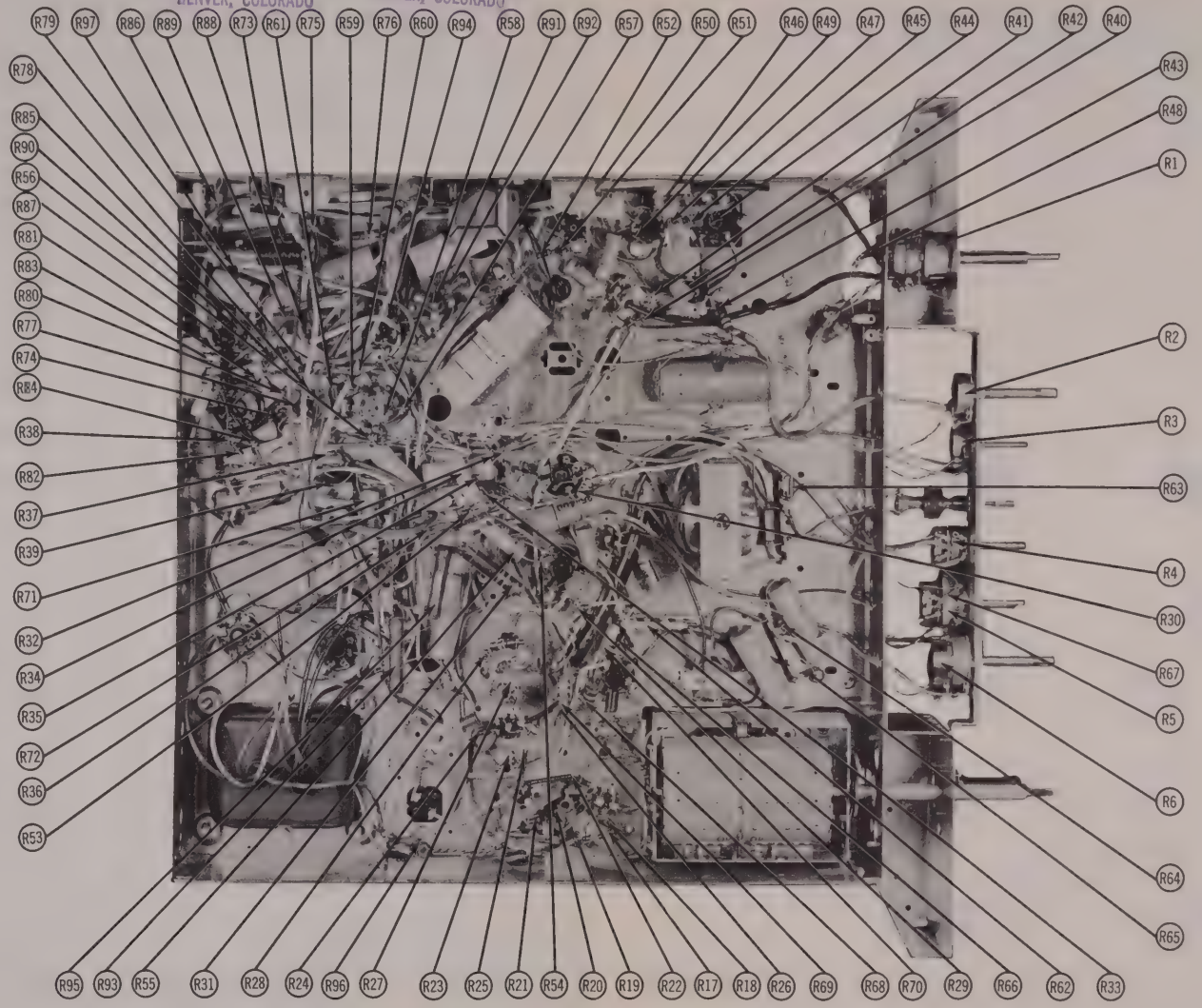
CENTERING

Centering is accomplished mechanically by positioning the focus coil. Adjust the three knurled nuts located on the focus coil bracket until picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Disconnect built-in antenna. Remove 2 wood screws. Remove antenna bracket.
4. Disconnect speaker, focus coil plug, yoke plug, HV lead and CRT socket.
5. Loosen 1 metal screw . Remove yoke bracket.
6. Remove 5 chassis bolts. Remove chassis.
7. Remove 4 speaker nuts. Remove speaker.

3524 MEADE ST.
DENVER, COLORADO



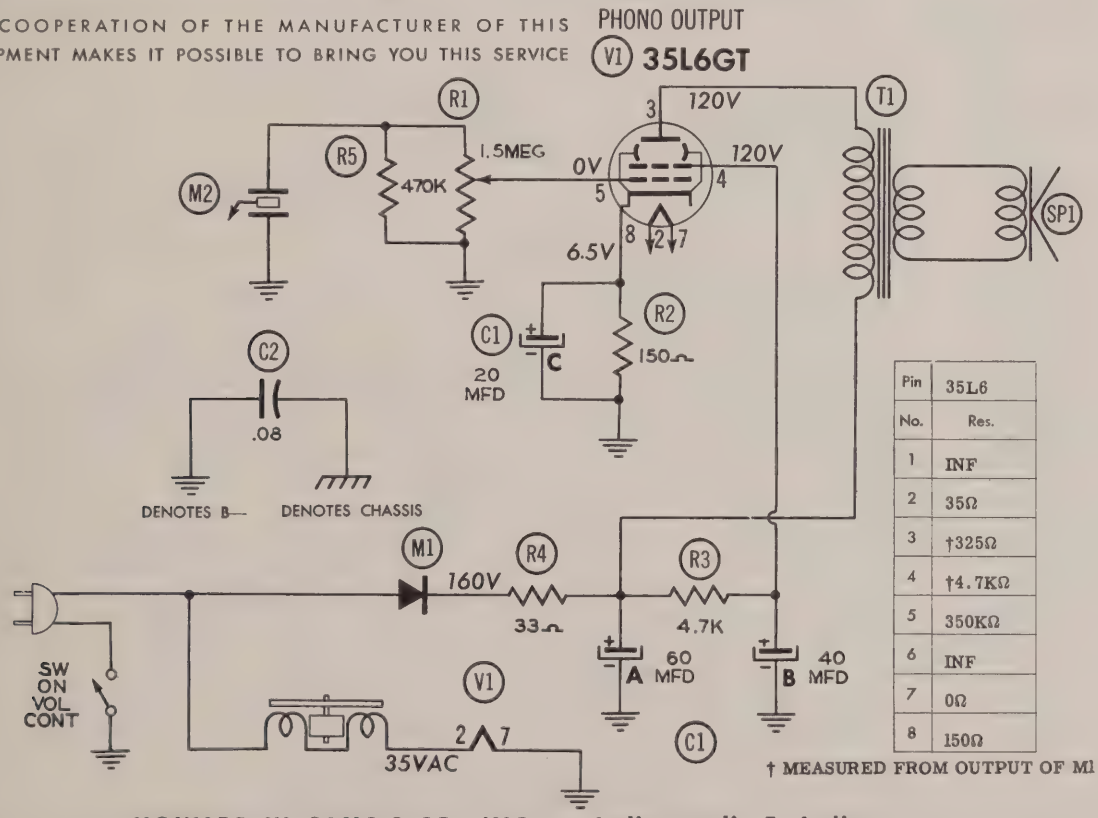
CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

V-M
MODEL 121

TRADE NAME	V-M Model 121
MANUFACTURER	V-M Corp., Benton Harbor, Mich.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (One)	Type 35L6GT Audio Amp.
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .22 Amp. @ 117 Volts AC

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

V-M
MODEL 121



Pin No.	35L6 Res.
1	INF
2	35Ω
3	†325Ω
4	†4.7KΩ
5	350KΩ
6	INF
7	0Ω
8	150Ω

† MEASURED FROM OUTPUT OF M1

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		V-M PART No.	STANDARD REPLACEMENT		
V1	Audio Output	35L6GT	35L6GT	7S	

CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	V-M PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	60	150		AFH3-81		C060			TVA-3436	Red
B	40	150								Yellow
C	20	25								
C2	.08	400								Green

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1.5Meg	½	11950	Q11-138	AG-83-S	AB-75	U-155	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	KB-1	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	V-M PART No.	IRC PART No.	
R2	150Ω	½		BTS-150	
R3	4700Ω	½		BTS-4700	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	V-M PART No.	IRC PART No.	
R4	33Ω	½		BTS-33	
R5	470KΩ	½		BTS-470K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	V-M PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.14KΩ	3.1Ω		A-3876①	A-2928 ①	S-2X ①	Z1001 ①	24S50 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	V-M PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.1Ω		ST-113 Mod P4-X	4A07	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT	V-M PART No.	SELETRON PART No.	FEDERAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	
M1	.049A		8J1	1002A	6S65	65	

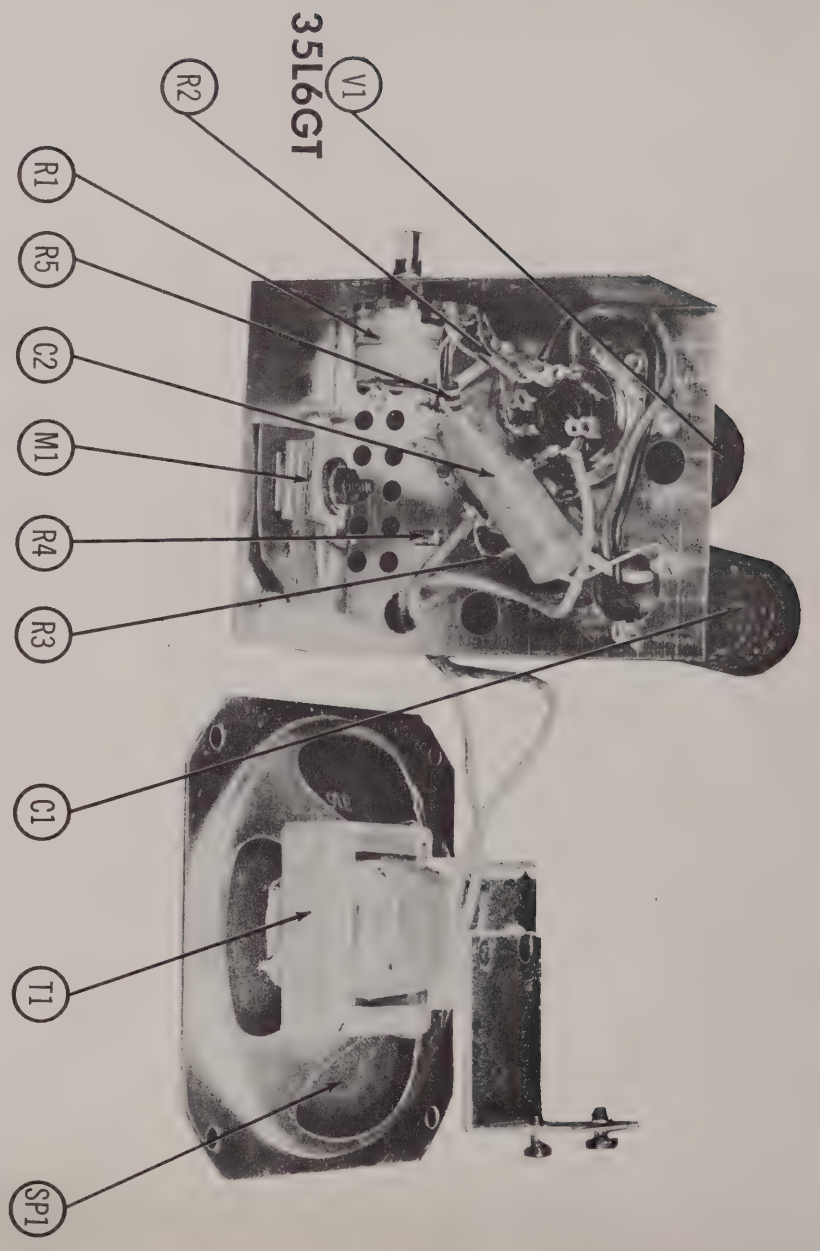
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	V-M PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2						* 2500		* Complete arm and cartridge assembly.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	V-M PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M3		† W-422 or † J-752	† B-379	TW-14AGA	* Metal † Jewel ♦ Diamond



WILCOX-GAY
MODELS 400A, B, C

WILCOX-GAY
MODELS 400A, B, C

TRADE NAME	Wilcox-Gay Model 400A, B, C
MANUFACTURER	Wilcox-Gay Corp., 604 Seminary St., Charlotte, Mich.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Four)	Types 12AX7 AF Amp., (2) 35L6GT Audio Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .28 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER SEE V-M MODEL 950 - PHOTOFACT SET 107 - FOLDER 13 OR RECORD CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

WILCOX-GAY MODEL 400A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Wilcox-Gay PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AX7	12AX7	9A	
V2	Audio Output	35L6GT	35L6GT	7S	
V3	Audio Output	35L6GT	35L6GT	7S	
V4	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Wilcox-Gay PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/80-40-20		BBRT84215		3N538	TVA-3455	Red
B	80	150								Yellow
C	20	150								Blue
C2	100	25		PRS25/100		BRH251		TC2501	TVA-1207	
C3	.005	400		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C4	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C5	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	100			S1100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C7	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C8	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C9	.03	400		P488-03		CUB4S3		PT413	4TM-S3	
C10	.04	400		P488-04		CUB4S4		PT414	4TM-S4	
C11	.05	400		489ZX-05	DF-503	CUB4S5		PT415	4TM-S5	

CONTROLS

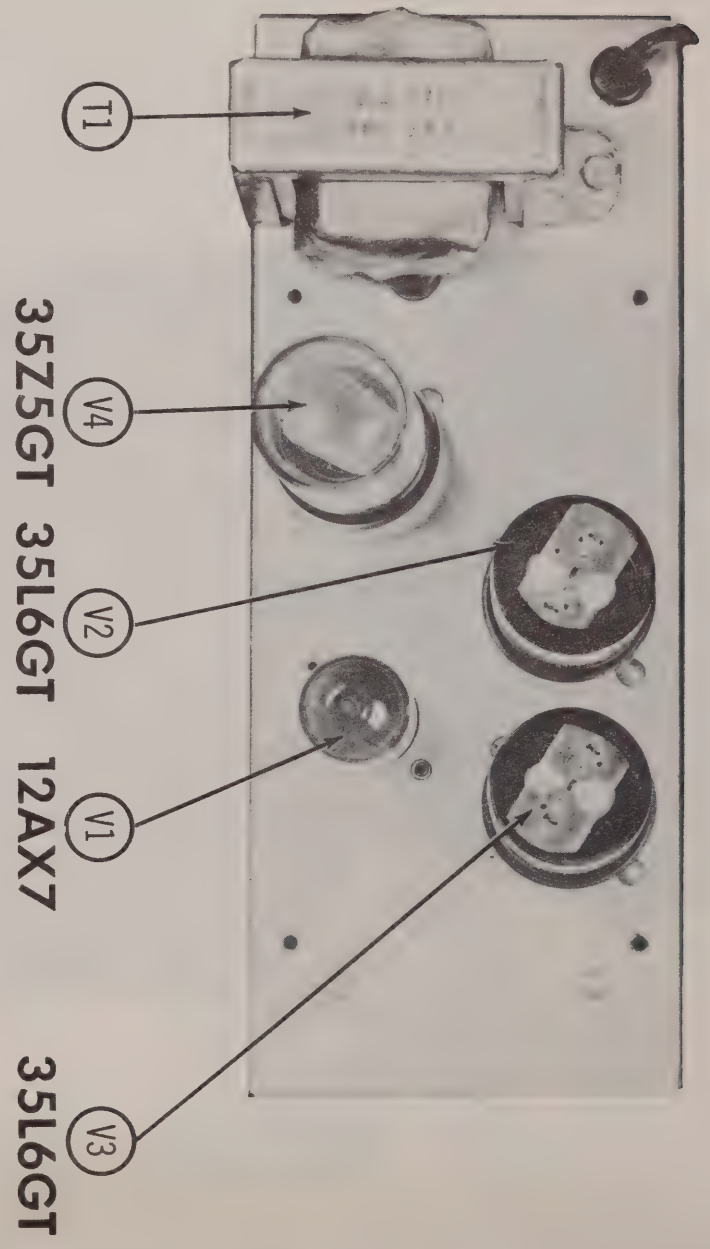
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Wilcox Gay PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	1.5 Meg	½	C8.201-16					Loudness
R2A	7500Ω	½	50-47	Q11-115	A47-7500-S	AB-13	U-20	Treble
B	Shaft		Not Req.	Not Req	KSS-3	AK-4	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Wilcox Gay PART No.	IRC PART No.	
R3	47KΩ	½		BTS-47K	
R4	10 Meg	½		BTS-10 Meg	
R5	4300Ω	½			
R6	10KΩ	½		BTS-10K	
R7	220KΩ	½		BTS-220K	
R8	220KΩ	½		BTS-220K	
R9	47KΩ	½		BTS-47K	
R10	470KΩ	½		BTS-470K	
R11	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	Wilcoz Gay PART No.	IRC PART No.	
R12	75Ω	2			
R13	22Ω	1			
R14	56Ω	2			
R15	600Ω	10		1 3/4A-600	
R16	100Ω	2			
R17	10KΩ	½		BTS-10K	
R18	2.2 Meg	½		BTS-2.2Meg	
R19	18KΩ	½		BTS-18K	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Wilcox Gay PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	5KΩCT	6.4Ω tap@ 1.8Ω	C-9.375						

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Wilcox Gay PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"	PM	3.6Ω	C-30.442A	ST-108 Mod. P6-X	6A21	Speakers connected in parallel.
SP2	6"	PM	3.6Ω	C-30.442A	ST-108 Mod. P6-X	6A21	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	Wilcox Gay PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1						43	0-2 or S-2	

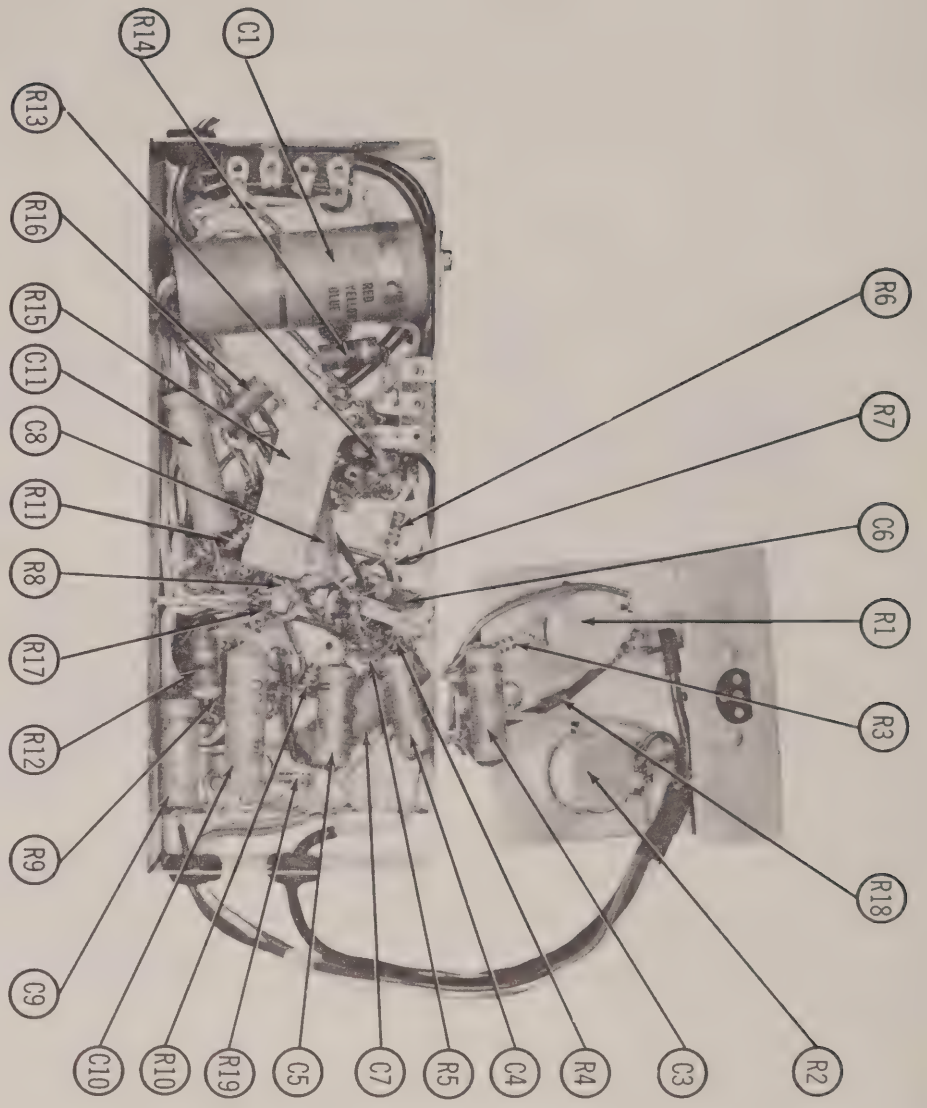
ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

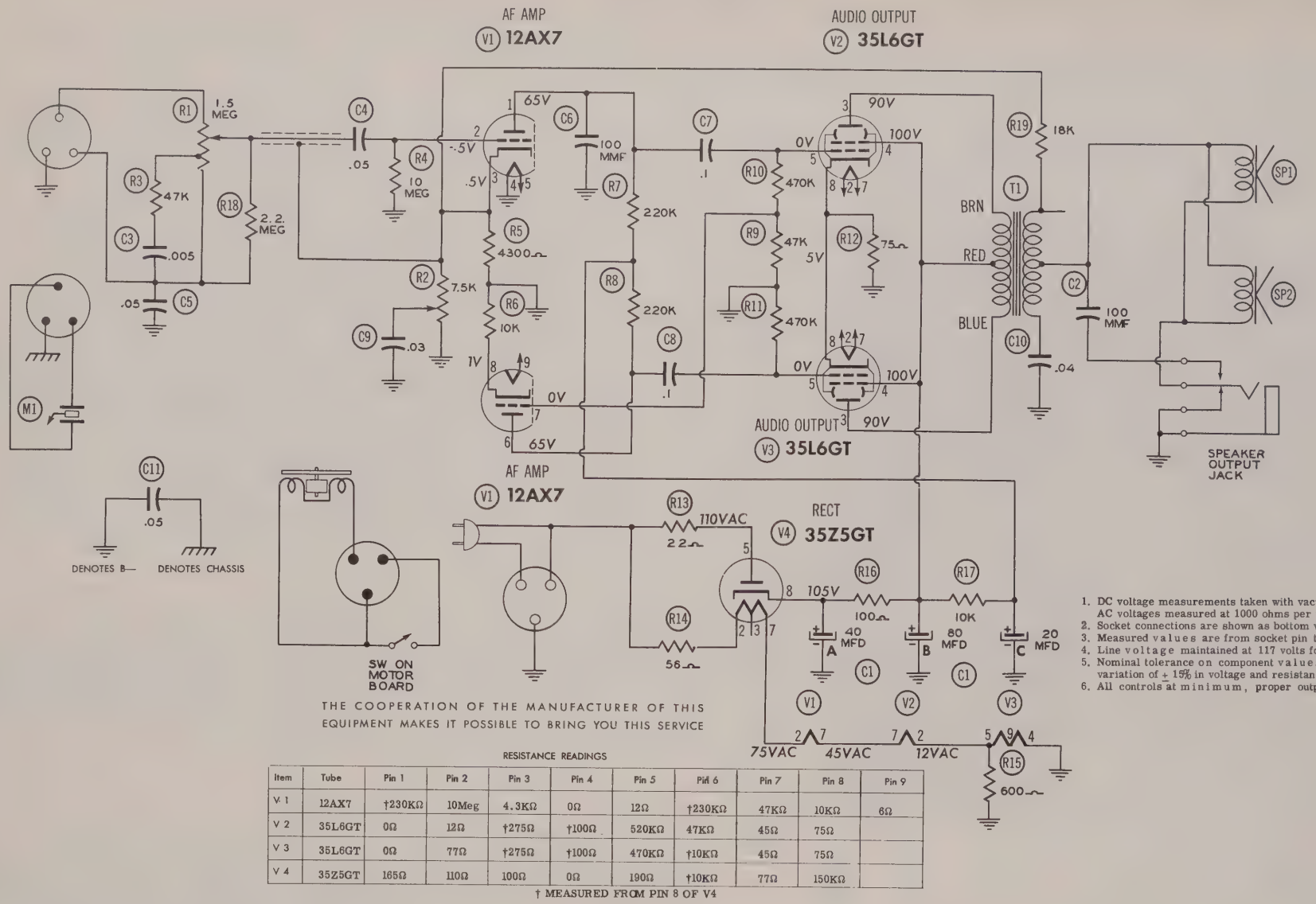
ITEM No.	REPLACEMENT DATA				REMARKS
	Wilcox-Gay PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2		† S-66	† AC-434 ♦† AC-434D1 †♦ AC-434D2 ♦ AC-434D	† W-75TPS	* Metal † Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW



WILCOX-GAY MODEL 400A

WILCOX-GAY MODEL 400A



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†230KΩ	10Meg	4.3KΩ	0Ω	12Ω	†230KΩ	47KΩ	10KΩ	6Ω
V 2	35L6GT	0Ω	12Ω	†275Ω	†100Ω	520KΩ	47KΩ	45Ω	75Ω	
V 3	35L6GT	0Ω	77Ω	†275Ω	†100Ω	470KΩ	†10KΩ	45Ω	75Ω	
V 4	35Z5GT	165Ω	110Ω	100Ω	0Ω	190Ω	†10KΩ	77Ω	150KΩ	

† MEASURED FROM PIN 8 OF V4

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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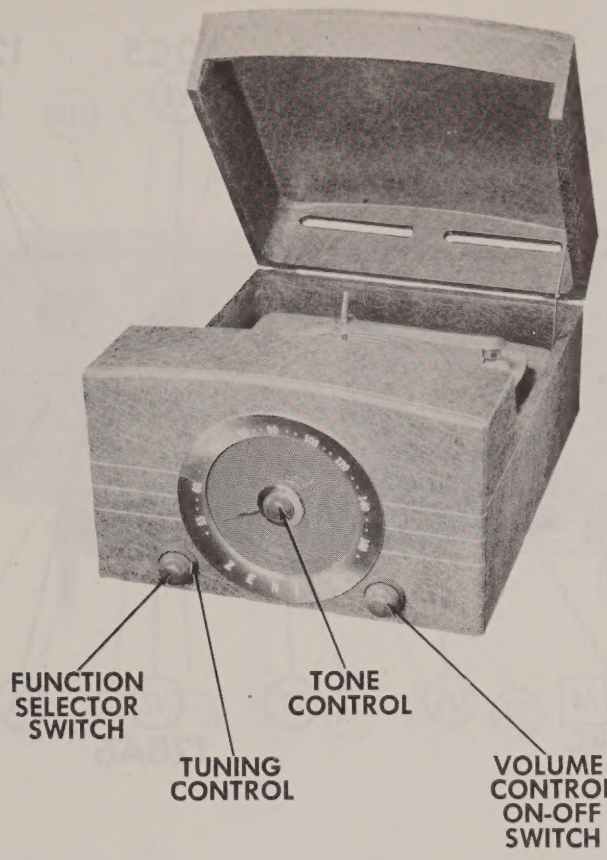
ZENITH
MODELS L565E, R (Ch. 5L09)



ZENITH
MODELS L565E, R (Ch. 5L09)

TRADE NAME	Zenith Model L565E, R (Ch. 5L09)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver With 3 Speed Automatic Record Changer
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles
RATING	.25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting. Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. If range of A5 is insufficient, adjust trimmer on opposite side of oscillator stator plates.
3.		"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum deflection.

FOR SERVICE INFORMATION ON ZENITH RECORD CHANGER UNIT MODEL S-14053 SEE PHOTOFACT SET 226 - FOLDER 13.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL L565E, (Ch. 5L09)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■80	150	22-2272	AFH3-13		C012		FP216	R1040	
B	▲40	150						TC45		
C	20	150								
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	110		22-5	SI110	D6-111		GP2K-111			
C4	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C5	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	.01	200	22-826	P288-01	D6-103	PJ2S1	GP2-333-103	PT411	2TM-S1	
C7	4000		22-4	BPD-004	DD-402	K078	801-004	DC-524	5HK-D4	
C8	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C9	4000		22-4	BPD-004	DD-402	K078	801-004	DC-524	5HK-D4	
C10	.05	200	22-178	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C11	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C12	470		22-6	BPD-00047	D6-471	K060	GP2K-471	UC-5347	5GA-T47	
C13	.01	400	22-1182	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C14	.01			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C15	.05	200	22-829	P288-05		PJ2S5		PT415	2TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500K	½	63-2270	Q11-133	A47-500K-S	AB-59	U-50	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A
R2A	500KΩ	½	63-2269	Q11-133	A47-500K-S	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KSS03	AK-4	Not Req.	Attach to R2A

RESISTORS

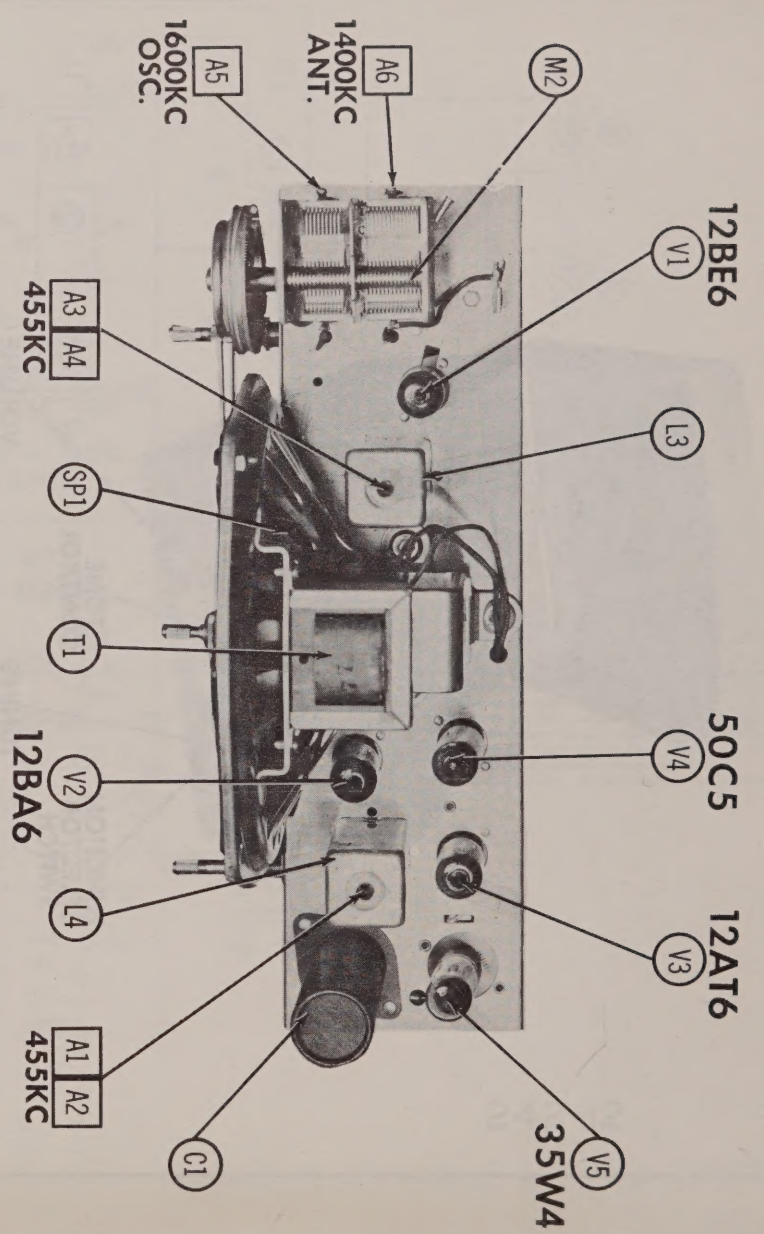
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R3	10KΩ	½	63-1828	BTS-10K	
R4	15 Meg	½	63-1961	BTS-15Meg	
R5	3. 3Meg	½	63-1933	BTS-3. 3Meg	
R6	120Ω	½	63-1747	BTS-120	
R7	4. 7Meg	½	63-1940	BTS-470Meg	
R8	2. 2Meg	½	63-1926	BTS-2. 2Meg	
R9	4. 7Meg	½	63-1940	BTS-4. 7Meg	
R10	470KΩ	½	63-1898	BTS-470K	
R11	820Ω	¼	63-1782	BTS-820	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R12	470KΩ	½	63-1898	BTS-470K	
R13	2200Ω	1	63-1800	BTS-2200	
R14	1000Ω	1	63-1574	BTA-1000	
R15	10KΩ	½	63-1828	BTS-10K	
R16	1500Ω	½	63-1793	BTS-1500	
R17	150Ω	1	63-1977	BTA-150	
R18	22Ω	1	63-1450		
R19	220KΩ	½	63-1884	BTS-220K	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2. 3KΩ	3. 2Ω	206-697	A-3330 ①	A-3031 ①		Z1105 ①	TS-24S50A ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.2Ω	49-697	ST-115 Mod P8-V	8A21	

COILS (RF-IF)

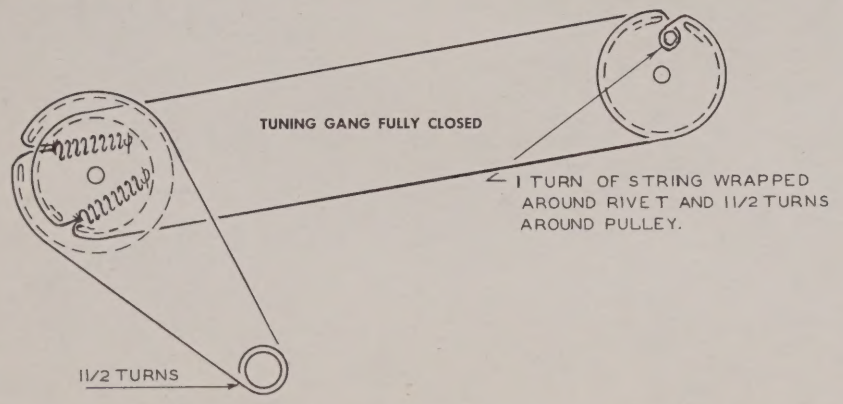
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.2Ω		S-18696				
L2	Osc. Coil	.8Ω	6Ω	S-13799	14-1074		71-Osc. †	
L3	Input IF	24Ω	24Ω	95-1101	16-6666	BC-368	012-C1	
L4	Ouput IF	24Ω	24Ω	95-1102	16-6770 *	BC-355 *	12-C6 *	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	ZENITH PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	142-72							

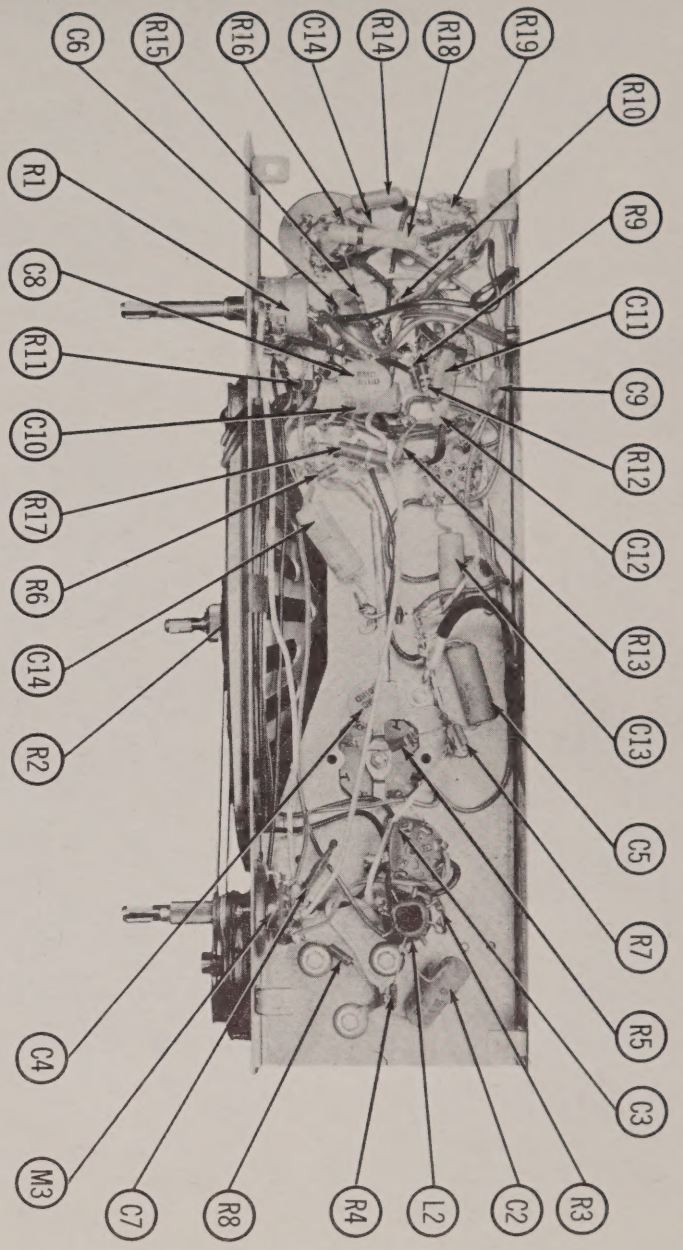
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M2	Tuner	22-2273	2 section (18-447MMF, 31-197MMF)
M3	Switch	85-532	Radio-phono
	Cabinet	14-1572E	L565E
	Cabinet	14-1572R	L565R
	Knob	S-18927	Volume L565E
	Knob	46-538	Tuning L565E
	Knob	46-979	Radio-phono L565E
	Knob	46-980	Tone L565E
	Knob	S-18665	Volume L565R
	Knob	46-718	Radio-phono L565R
	Knob	46-855	Tone L565R
	Knob	46-946	Tuning L565R
	Dial scale	26-456	
	Dial pointer	59-255	

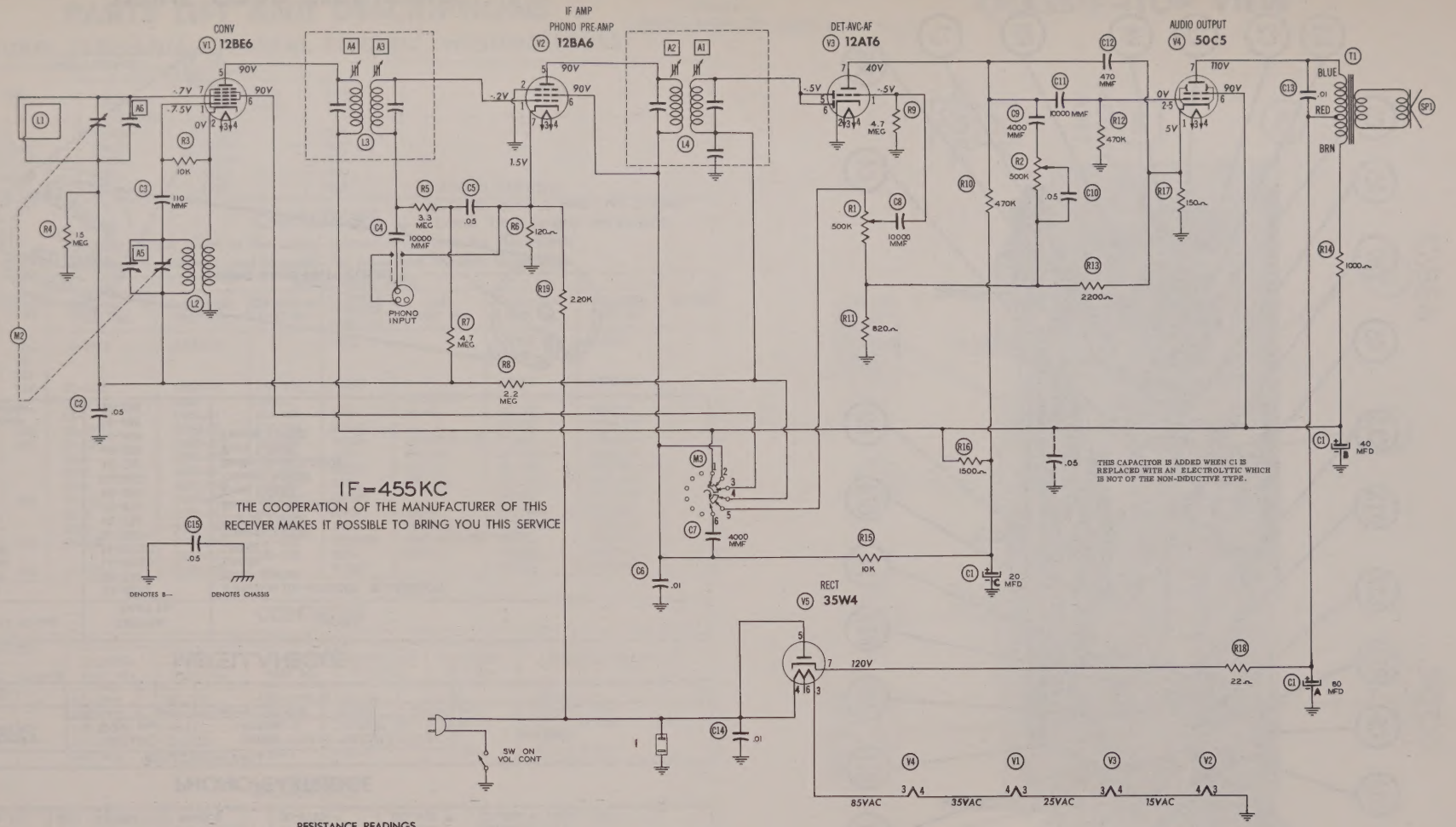


DRIVE CORD STRINGING

CHASSIS—BOTTOM VIEW



ZENITH MODEL L565E, (Ch. 5L09)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	10KΩ	.8Ω	25Ω	38Ω	†12.5KΩ	†12.5KΩ	2.7Meg
V 2	12BA6	11Meg	0Ω	0Ω	13Ω	†12.5KΩ	†12.5KΩ	120Ω
V 3	12AT6	4.7Meg	0Ω	25Ω	13Ω	500KΩ	500KΩ	†470KΩ
V 4	50C5	150Ω	470KΩ	90Ω	38Ω	470KΩ	†1KΩ	†240Ω
V 5	35W4	120Ω	28Ω	90Ω	125Ω	125Ω	115Ω	150KΩ

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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